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A SECOND CHILD IN THE FAMILY

– THE CONSEQUENCES OF CHANGING FAMILY AND FERTILITY PATTERNS IN THE CZECH REPUBLIC

DRUHÉ DÍTĚ V RODINĚ – SOUVISLOSTI MĚNÍCÍCH SE RODINNÝCH A REPRODUKČNÍCH VZORCŮ V ČESKÉ REPUBLICE

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Vedoucí: Prof. RNDr. Jitka Rychtaříková, CSc.

Prohlášení:

Prohlašuji, že jsem závěrečnou práci zpracovala samostatně a že jsem uvedla všechny použité informační zdroje a literaturu. Tato práce ani její podstatná část nebyla předložena k získání jiného nebo stejného akademického titulu.

V Praze, 20.8.2011 .…….

Mé poděkování patří vedoucí disertační práce prof. RNDr. Jitce Rychtaříkové, CSc. za odborné vedení, rady a připomínky k práci.

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Děkuji též všem ostatním, kteří mi v průběhu psaní práce poskytovali cenné rady a podněty, především pak kolegyním z týmu rodinné politiky Výzkumného ústavu práce a sociálních věcí.

V neposlední řadě patří velký dík mé rodině, bez jejichž podpory a motivace v době studia i při psaní této práce by text nemohl vzniknout.

A Second Child in the Family – the Consequences of Changing Family and Fertility Patterns in the Czech Republic

Abstract

The theme of this study is the two-child family model and second order births in the context of a changing Czech society. The study investigates the conditions and context surrounding the birth of a second child and the general values associated with children and focuses on selected factors associated with the decision-making process surrounding having a second child including the factors that a woman takes into account when deciding whether to have another child. Furthermore, the author studies the determinants of having a second child in Czech society and the relationship between the likelihood of the birth of a second child and different micro-level covariates and attempts to provide an explanation of the processes acting upon second childbearing through interaction with education and partnerships/union dynamics.

The thesis is divided into three thematic sections. Following the introductory chapters, the first part of the study addresses fertility patterns in the Czech Republic, societal conditions and theoretical concepts which deal with possible explanations for changing fertility behaviour. The second part of the study considers decision-making processes and value orientations from the perspective of the individual and is devoted to an analysis of the intentions, preferences and value orientations associated with reproductive behaviour in the Czech Republic. The third part of the study is devoted to the life course approach, event history modelling and to an analysis of the determinants of having a second child.

The data used in this study was chosen in order to illustrate both the macro and micro (individual) perspectives of reproductive behaviour in the Czech Republic. The data used in this study is taken namely from the Czech Statistical Office (CZSO), the Human Fertility Database and the Generations and Gender Survey (GGS) carried out in the Czech Republic in 2005 and 2008 as part of the Generation and Gender Programme international project coordinated by the United Nations Economic Commission for Europe.

Keywords: fertility, childbearing, intentions, two-child family model, second child, event history analysis, Czech Republic

Druhé dítě v rodině – souvislosti měnících se rodinných a reprodukčních vzorců v České republice

Abstrakt

Disertační práce je věnovaná plodnosti druhého pořadí a modelu dvoudětné rodiny v kontextu měnících se společenských a strukturálních podmínek v České republice. Studie zkoumá podmínky a kontext narození druhého dítěte i obecné hodnoty spojované s dětmi a rodičovstvím a obsahuje diskusi vybraný faktorů souvisejících s rozhodovacím procesem ohledně narození druhého dítěte. Autorka analyzuje také determinanty narození druhého dítěte v české společnosti a pravděpodobnost narození druhého dítěte s ohledem na vybrané proměnné na mikro-sociální úrovni a pokouší se postihnout procesy, které působí na zvyšování či snižování intenzity narození druhého dítěte mezi různými skupinami žen. Specifickou pozornost v tomto ohledu věnuje vlivu vzdělání a partnerské historie potenciálních matek.

Studie je rozdělena do tří tematických částí. Po úvodních kapitolách je první část věnována vývoji porodnosti a proměnám reprodukčních vzorců v České republice v průběhu několika posledních desetiletí, proměně (společenského) kontextu, ve kterém je reprodukce realizována, ale také teoretickým koncepcím, které se zabývají vysvětlením výrazných proměn reprodukčního chování v posledních 20 letech. Druhá část studie je zaměřena na rozhodovací procesy a hodnotové orientace spojené s reprodukcí z pohledu jednotlivce a je věnována analýze plánů, preferencí a hodnotových orientací spojených s reprodukčním chováním v České republice. Zvláštní pozornost je v tomto ohledu věnována tématu dvoudětné rodiny. Třetí část vychází z obecného teoretického rámce studia životní dráhy a za použití metod analýzy historie událostí zkoumá vybrané proměnné, které mohou ovlivňovat narození druhého dítěte i jeho časování.

Pro analýzy jsou použity tři hlavní datové zdroje – data Českého statistického úřadu, Human Fertility Database a data reprezentativního výběrového šetření Muži a ženy v ČR: životní dráhy a mezigenerační vztahy (Generations and Gender Survey 2005 a 2008). Toto šetření je součástí mezinárodního programu koordinovaného Ekonomickou komisí OSN pro Evropu.

Klíčová slova: porodnost, plodnost, reprodukční plány, dvoudětný model, plodnost druhého pořadí, analýza historie událostí, Česká republika

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1. Introduction

The social, political and economic transformations experienced by the former socialist countries of Central and Eastern Europe since the beginning of the 1990s have resulted in rapid changes in demographic trends the consequences of which, with regard to nuptiality and fertility, are significant.

Since the introduction of a new labour market model in the Czech Republic after 1989, fertility and family behaviour have undergone profound change. The period since 1990 has witnessed far-reaching changes in the occurrence and timing of family life transitions among young adults. Family formation was postponed and total fertility rates (TFR) declined sharply from 1.89 to 1.18 between 1990 and 1996 and remained below the 'lowest-low' threshold of 1.3 up to and including 2005. Recent data has revealed an increase in total fertility to 1.50 in 2008.

The on-going transition to the late childbearing pattern can be illustrated by a sharp rise in the mean age of mothers at first childbirth. The Czech population in the 1980s had a relatively high fertility rate and, moreover, fertility at a young female age (20-24 years). Whereas in 1992 the mean age of mothers at first birth was still 22.5, in 1995 it had risen to 23.3, and by 2008 it had reached 27.3 years (almost five years later than in the early 1990s).

Whereas cohorts born during the 1940s, 50s and 60s are characterised by early (and almost universal) marriage and family formation, the large cohorts of the mid-1970s exhibit more diverse patterns, characterised by a marked postponement of union formation and parenthood as well as higher rates of childlessness, maintaining single status and out-of-wedlock births.

A continuous postponement of childbearing commenced with cohorts born in the late 1960s; a large decline in first childbearing was observed among women born in the 1970s. Those women were in their early 20s or even still in adolescence when the transition to the market economy began and a shift in their fertility behaviour is evident. Women born in the late 1960s and 1970s gradually reduced their young age fertility and the fertility rates of first birth order declined particularly in the age group 18-25. A decline in second birth intensities occurred among generations born in the late 1960s. This shift indicates that a change in reproductive patterns and a postponement of childbearing to a later age occurred even among those women who, in many cases, already had one child at the time of profound social change having adhered to the young age pattern of entry into motherhood. The growing diversity in the timing and sequencing of family-related transitions is reflected in an increasing social differentiation in demographic behaviour.

The most characteristic trend in terms of reproductive patterns during the socialist era was a strong orientation towards the two-child family model. The two-child family model was a distinctive feature of the post-war generations and was further strengthened among the generations of the late 1940s and 1950s by the decline in the proportion of women with only one child. The universality of the two-child family model in the socialist era is apparent from both fertility behaviour and research on the population climate. According to surveys focusing on family issues and plans with respect to

reproduction, the mean number of children planned by young Czech women fluctuated between 2.2 (in 1956, Wynnyczuk 1969) and 2.41 (in 1970) and declined slightly afterwards to 2.03 (in 1985) and 2.02 (in 1991) (Kučera 1994: 128). For the whole period, the mean number of children planned by women was above 2 and, conversely, the proportion of women planning to remain childless was very low (1-2%).

Over the last twenty years reproductive behaviour has changed profoundly and the reproductive patterns of contemporary young adults differ significantly in terms of both the timing and sequencing of family related transitions to those of preceding generations. However, according to recent sociological surveys, the ideal of a two-child family still persists and the two-child family model has been identified consistently over the long term in various sociological studies (e.g. surveys carried out by the Research Institute for Labour and Social Affairs, CVVM 2003, Fialová et al. 2000, Hamplová 2000b).

The theme of this study is the two-child family model and second order births in the context of a changing Czech society. The author focuses primarily on the relationship between second births and other life domains (such as educational and partnership careers) and macro-structural conditions and investigates the determinants of having a second child in Czech society before the political changes of 1989, during the following period of fundamental structural change as well as the subsequent ten years or so under the conditions of a relatively established market economy.

Both the period and cohort approaches are employed in the study. The period perspective makes it possible to observe the shift towards later childbearing and to analyse the prevailing fertility pattern according to distinct periods. The cohort approach is important for evaluating period changes in a time of massive fertility postponement and under conditions of a transformation in childbearing patterns. In this study the author employs both aggregate data methodology and the viewpoint of an individual's decision-making and life-course perspective.

The study investigates the conditions and context surrounding the birth of a second child and the general values associated with children and focuses on selected factors associated with the decision-making process surrounding having a second child including the factors that a woman takes into account when deciding whether to have another child.

Furthermore, the author studies the determinants of having a second child in Czech society and the relationship between the likelihood of the birth of a second child and different micro-level covariates and attempts to provide an explanation of the processes acting upon second childbearing through interaction with education and partnerships/union dynamics.

The study is divided into three thematic sections which follow two introductory chapters - Chapter 2 which introduces the research questions to be addressed and analysed in the study and Chapter 3 which provides a detailed description of the data employed.

Following the introductory chapters, the first part of the thesis is devoted to fertility patterns in the Czech Republic, societal conditions and theoretical concepts which deal with possible explanations for changing fertility behaviour.

Chapter 4 presents a basic overview of the societal changes that occurred over the last decade of the 20th century. Czech society has undergone major social, economic, and political transformation during the last 20 years following the collapse of the totalitarian socialist regime. The transformation consisted of a complex process of structural and institutional changes that had a substantial impact on the attitudes and views of society as well as on the living conditions and behaviour of the population. The trends of the last 20 years are contrasted with previous developments in the Czech Republic (Czechoslovakia) since the societal context lies firmly behind demographic behaviour and changes in reproduction and fertility. This chapter focuses primarily on the period from the end of the Second World War to the present. Attention is devoted principally to the changing social structure of the population, the educational structure, the structure of households and families and particularly to the social protection system and family policy. The chapter indicates that shifts in fertility trends were rooted in the fundamental economic, social and cultural transformation which affected the character of partnership and family relations, influenced educational and employment performance, intensified the conflict between employment and parenthood and strengthened the problem of work-life balance in society.

Chapter 5 presents an analysis of fertility patterns in the Czech Republic over the last 50 years and focuses primarily on the most pronounced changes concerning fertility which have taken place since the early 1990s and are characterised primarily by a sharp decline in fertility rates and a steep rise in the mean age at childbearing. This chapter focuses primarily on first and second order fertility. Studying first births is essential since one of the most important topics of this chapter is the process of fertility postponement which has been mirrored by an unprecedented increase in the mean age at birth in the Czech Republic over the past 15 years. An analysis of fertility postponement is important in terms of understanding period fertility trends which underwent sizeable fluctuations during the period analysed and is also important in terms of explaining the extremely low levels of period fertility observed in the late 1990s and at the beginning of the 21st century.

Chapter 5 deals both with the issues of period and cohort fertility and the postponement of childbearing as well as with changes in the relationship between fertility patterns and partnership formation and living arrangements since the proportion of children born outside a marital union has increased significantly since the early 1990s.

In **Chapter 6**, the author summarizes theories of fertility which deal with explanations of fertility decline in European countries since the 1960s. Particular attention is devoted to theories that were formulated in connection with significant changes in reproductive patterns in Central and Eastern Europe. In the scientific debate on transforming reproductive patterns and life courses over the last 20 years in Central and Eastern Europe, two basic lines of interpretation of the changes in reproductive behaviour among younger generations of Czech men and women have been proposed. In the context of arguments regarding the scale and significance of the spread of individualistic value systems, the debate tends to be simplified into the "economic crisis" versus the "cultural changes" arguments. However, some authors (Lesthaege, Surkyn 2002, Philipov 2002) argue that these interpretations need not be mutually exclusive. Structural influences (economic factors) caused by economic and political transformation can be combined with long-term changes in values, and the degree of influence of structural and cultural factors may change over time.

Chapter 6 deals with both the theoretical line which stresses socio-economic elements (this theoretical line draws from the economic approach and rational choice theory) and the second demographic transition theory. The author also introduces the theory of gender equity formulated by McDonald (2000 a,b) who explained very low levels of fertility in advanced countries in terms of incoherence between the levels of gender equity which apply to different social institutions.

The second part (chapters 7 and 8) of the study considers decision-making processes and value orientations from the perspective of the individual and is devoted to an analysis of the intentions, preferences and value orientations associated with reproductive behaviour in the Czech Republic. Today's low levels of fertility in many European countries have raised the question as to whether reproductive behaviour adequately reflects fertility preferences, i.e. preferences in terms of the number of children people would like to have. In recent years surveys in different European countries have revealed that fertility ideals appear to be changing; thus declining fertility ideals make up one of the key features in contemporary studies focusing on declining fertility levels in European countries since analysis has identified declining desired family size as one of the principal forces driving fertility transitions (Bongaarts 2001).

Chapter 7 analyses the fertility intentions of the Czech population (ideal and expected number of children). This chapter also includes an analysis of the socio-demographic characteristics of women who intend to have one, two or three and more children and presents a selection of the covariates that determine whether women intend to have a given number of children compared with those who have other fertility intentions (chapter 7.3).

After providing an explanation of the distinction between the quantum and tempo of fertility and following a detailed analysis of the question of family size preferences, the author devotes part of chapter 7 (sub chapter 7.4) to the ideal time at which to have a child as far as Czech women and men are concerned.

Sub chapters 7.5 and 7.6 look at general values associated with children and primarily at selected factors associated with the decision-making process surrounding having a second child including the conditions women take into account when deciding whether to have another child.

Chapter 8 focuses on childbearing intentions and the realisation thereof. This topic raises an important question - to what extent plans differ from actual realisation, i.e. whether women have the number of children they plan during the life course. The chapter analyses short term intentions with regard to having a child (within the next three years) and the realisation thereof by men and women born between 1960 and 1987 by means of a longitudinal study which considered fertility intentions within a three-year period and included subsequent follow-up work which monitored actual childbirth as well as respondents' "new or revised" childbearing intentions at the end of the period.

Fertility intention is only one of several factors which feature in the overall decision-making process. Other factors that must be taken into account consist of personal characteristics, a respondent's surrounding environment and social ties as well as changes in living conditions that might lead to a redefinition in terms of an individual's initial plans. In addition, the author includes the

labour-market factor since parenthood is often, especially for women, perceived as a negative influence on their occupational and therefore financial conditions.

The third part (chapters 9, 10 and 11) of the study is devoted to the life course approach, event history modelling and to an analysis of the determinants of having a second child. The life course approach provides an opportunity to link demographic events to other determinants and aspects which could affect an individual's behaviour. The object of the study of event history analysis is the life course of the individual. Using this methodological approach it is possible to study the sequence of the socially defined events and roles that an individual undergoes during his/her lifetime. It allows the study of how a particular event (whether of a family, economic or other nature) experienced by an individual changes the probability of another event happening over his/her lifetime.

Chapter 9 is devoted to the life course approach, the concept of event history analysis and the basic principles, methods and data involved. Event history modelling techniques have become increasingly widespread in the social sciences over the last few decades and the range of applications includes demographic and sociological analysis, labour market studies, mobility and migration studies, as well as political science. In principle, event history analysis is an extension of the complex of methods connected with the life table approach and can be defined as an analysis of the duration of the non-occurrence of a given event during the risk period. The author also summarises both the topics involved in and the authors who use the event history approach when analysing socio-demographic issues in the Czech context.

Event history analysis methodology is used in **chapters 10 and 11** in order to investigate the determinants of having a second child. In this study the author is interested in selected events that women experience and especially in those factors which affect the timing and occurrence of a particular event – a second childbirth. Clearly, specific data is required if one chooses to employ this method of analysis therefore the author provides detailed information on the sample used for the analysis, the analytical approach applied and the relevant covariates in chapter 10.

2. Research questions

Given the currently low fertility rate, changing fertility and family behaviour and the continued postponement of childbearing to a later age amongst younger cohorts of women and, more particularly, the increase in the interval between the first and second birth[1], the important question is whether the proclaimed aspirations for a two-child family will be fulfilled and whether the tendency will be for women to actually have a second child. Will women continue to realise the two-child model, albeit later in life, or will they, for the most part, have only one child?

Permanent childlessness among Czech women is relatively low (the rate of childlessness among women born in 1965 was 7.5 per cent) and is likely to remain below levels recorded or projected in other Central European countries. According to estimates, 13-14 per cent of women born in 1975-1978 will remain permanently childless (Sobotka 2006: 66). The increase in the interval between the births of first and second children suggests that contemporary society has broken away to a certain degree from the earlier model of first child birth shortly after the wedding and second child birth within the following four years (Zeman 2006: 161).

Moreover, the question must be asked as to whether women will increasingly choose not to have more children after the first delivery, thus leading to an increase in the proportion of one-child families in society, or whether two distinctive groups will emerge: one remaining childless with the other perpetuating the two-child family model (merely postponed to a later age).

Chapters 7 and 8 focus on fertility plans and this topic raises one important question - to what extent plans differ from actual realisation and whether women have the planned number of children during the life course. The author examines the following issues in chapter 7:

- What aspirations concerning fertility are held by the current "younger middle" generation of women? What role do the values associated with children play within individual groups of women?
- What circumstances affect women's decisions about having (additional) children? What factors are associated with their decisions as to having a second child?
- Can one speak in terms of a group or groups within the younger middle generation of Czech women that behave differently when making decisions about having a second child? Who are the women who do not share the ideal of the two-child family model?

Chapter 8 analyses the issue to what extent reproductive plans and childbearing intentions differ from the actual realisation thereof and whether the planned number of children is in fact fulfilled. Chapter 8 analyses and discusses four principal and closely interrelated research topics:

[1] Between 1990 and 2005 the interval between the births of first and second children rose from 3.7 to 5.1 years (Zeman 2006: 161).

- To what extent have different childbearing intentions "resulted in" childbirth over a three year period?
- What kind of childbearing intentions are more likely to be realised? This leads on to a further closely related topic that is particularly important for fertility studies in demography: the question of the predictive power of declared intentions.
- Which individual characteristics play a role in the realisation or non-realisation of time-specific fertility intentions?
- What is the level of stability of such intentions should they not be realised? The author will study the stability of childbearing intentions with regard to those respondents who did not experience childbirth during the time period studied.

In addition to these questions, the author addresses a basic hypothesis concerning the distinctive character of women who have completed post-secondary schooling. This distinctiveness relates to their aspirations with respect to numbers of children, their value orientations and their assessment of the conditions and impacts of second children within the family. Expected differences result from the differential analysis of fertility, from theoretical concepts of the lost opportunity costs theory (based on the microeconomic theory of the decline of fertility levels) and from theories that associate modern (or post-materialistic) values with the attainment of higher levels of education. If it is true that more highly educated women tend to have only one child, that decision might be influenced to a greater or lesser extent by expectations concerning the difficulties involved in practicing a profession and in reconciling household and occupational responsibilities once additional children are born. It could also be predicted that more highly educated women will assign different levels of importance to financial and material factors than their less educated counterparts.

The analysis of the transition to a second child which is presented in chapters 10 and 11 is based on the theoretical concept of the life course (Willekens 1999) and aims to point at factors influencing the likelihood of the birth of a second child. Factors include a woman's age at first birth, socio-economic status, marital status, number of children in the family of orientation and religious affiliation (e.g. Prskawetz, Zagaglia 2005, Šťastná 2005a, Köppen 2006). An additional issue consists of the question of the influence that education potentially has on the probability of higher order births. In several countries in recent years, analysis has suggested that education has a positive influence on the occurrence of higher order births – for example, such a correlation has been demonstrated for Western Germany (Kreyenfeld 2002, Alich 2006), Austria (Hoem et al. 2001) and the Scandinavian countries (Hoem & Hoem 1989, Kravdal 1992, Oláh 2003). This phenomenon has been explained by some in terms of the income effect, i.e. women who are better educated tend to work in better paid jobs thus contributing substantially to the family budget and meaning that financing a larger family is possible. However, other hypotheses have been put forward on this issue. The second birth risk in Western Germany, for instance, is considerably influenced by the characteristics of the woman's partner, primarily his education (which fits, in the context of Western German, with the model in which the occupational position of the "man and breadwinner" is decisive in terms of family size). In this case

the "selection" hypothesis was proved which suggests that the fact that women with the highest levels of education have decided to become mothers at all provides evidence of their pro-family orientation, and hence that such women are more likely to have additional children (Kreyenfeld 2002).

From the perspective of the life course approach, the transition to parenthood, i.e. the birth of the first child differs from that of the second in that the latter is considered to be an independent and specific life transition in which the "normative parental imperative" does not play a role (Rindfuss, Morgan, Swicegood 1987). According to this imperative, every (healthy) adult member of society should become a parent, but one child suffices for a person to realise the desire to become a parent (Presser 2001). Experience with the first child, however, provides an individual with a better idea of the challenges associated with childcare and its impacts on occupational and non-occupational domains. Such experience can result in a situation in which parents postpone or completely abandon the idea of having an additional child; for some women the social costs (primarily the loss of free time) of a second child compared to those of the first might outweigh the benefits of having a second child (Presser 2001).

Chapters 10 and 11 subsequently focus on an analysis of the conditions and context surrounding the birth of a second child and on discovering the relationship between the second birth risk and different micro-level covariates. More particularly, an investigation is made of the processes of second childbirth in terms of interactions with education and partnerships/union dynamics.

Entry into motherhood was only one of the many life events that underwent profound change after 1990. Moreover, specific questions arose which might be studied not only with regard to the first birth, but also concerning higher birth orders:

- How do early life course experiences and family background characteristics (such as the number of siblings or the family situation of the parents) influence the risk of a second birth?
- How important a role do personal characteristics such as education and partnership history play in the planning and timing of a second birth?
- How do changes in population/family policy and the socio-economic changes of the 1990s influence real family behaviour and how has the risk of a second birth changed over the last 35 years?

In order to address these questions the event-history approach was used to analyse Czech Generations and Gender Survey (2005) data. Using a set of covariates, several analytical models were designed focusing on the determinants of having a second child in Czech society.

3. Data sources

The data used in this study was chosen in order to illustrate both the macro and micro (individual) perspectives of reproductive behaviour in the Czech Republic. The macro perspective represents the analysis of period and cohort fertility trends in the Czech Republic during the second half of the 20th century and the early years of the 21st century (chapter 5). The main source of data was the Czech Statistical Office (CZSO) and the Human Fertility Database. The Human Fertility Database (HFD) for the Czech Republic is based on official data on birth counts published in vital statistics publications and records on individual births provided by the Czech Statistical Office, as well as on the official results of population censuses (for more details see the report which documents data on the Czech Republic collected for the Human Fertility Database project - Zeman 2009a). The Czech Statistical Office, since it provides data on the economy, education, labour etc., also serves as a data source for chapter 4 which deals with societal changes in the Czech Republic.

Chapters 7-11 focus on the micro perspective and are based on data from sociological surveys. The main data source consists of a unique data set taken from a survey that combines a prospective (carried out in two waves) and retrospective (ascertaining historical information on respondents) approach.

The data used in this study is taken from the Generations and Gender Survey (GGS) carried out in the Czech Republic in 2005 and 2008 as part of the Generation and Gender Programme international project coordinated by the United Nations Economic Commission for Europe. This programme aims at improving the knowledge base for policy-making in UNECE countries. The GGS consisted of a panel survey of a nationally representative sample of 18-79 year-olds in each participating country with at least three panel waves and an interval of three years between each wave.

As far as the Czech Republic is concerned, the sample survey "Men and Women in the Czech Republic: Life Courses and Intergenerational Relationships" [*Muži a ženy v ČR: životní dráhy a mezigenerační vztahy*] formed part of the research project "Family, Fertility and demographic ageing: Generations and Gender" [*Rodina, partnerství a demografické stárnutí: Generace a gender*] (hereinafter referred to by the international abbreviation GGS).

The aim of the first wave of the study, which took place in 2005, was to acquire in-depth knowledge of the factors shaping decision-making and relationships between partners and between parents and children as well as to map in detail the life histories of individuals. The principal aim was to study the dynamics of the development of the family and family relationships from their initiation throughout the entire life span. Thus it encompasses periods relating to several live cycles: from the start of the partnership to the birth of children, to middle age, to monitoring the living situations of senior citizens. Life-course theory stands behind the reasoning for the design of the questionnaire, therefore any event in the life of a person, such as marriage, birth of a child or divorce, could be studied in accordance with its dependency on a person's previous experiences and, in addition, every event subsequently shapes the decisions that a person makes later in the life course. GGS survey respondents, aged 18-79, were asked not just about themselves but also about their partners, parents

and children. The survey was designed to examine partner and intergenerational relations, gender issues, the situation in the household, residential mobility, social networks, informal and public transfers, education, health etc.

The sample study is set up as a panel survey and is expected to continue with two additional waves. Therefore attitudes and value orientations could be examined via the questionnaire. By employing a prospective research approach a better picture of situations, attitudes and opinions at a given moment and in a real context could be recorded and analysed jointly with data from the following waves without producing any posterior rationalisations of certain attitudes and decisions. The study emphasizes a longitudinal approach which will allow an examination of the course of changes in familial behaviour and their context over the next ten years (the survey will be repeated every three years).

The Czech first wave survey sample resulted in data on a total of 10 006 subjects consisting of 4 798 men (48%) and 5 208 women (52%) from cohorts born during the period 1926-1987. Participation was restricted to subjects of Czech nationality only and was collected by means of face-to-face interviews.

The second wave of the survey took place in 2008 and due to the panel nature of the data some of the respondents from the first wave were re-interviewed. In chapter 8 the author takes occasion to analyse this sample since the second wave provides a unique opportunity to compare original opinions and plans with future realisation. In 2005, both women and men were asked about their future childbearing plans and expectations concerning having a (another) child within the next three years; thus after the second wave in 2008 it was possible to assess whether those expectations had been met and whether and to what extent respondents' original opinions and attitudes with regard to children and their influence on family life were reflected in actual reproductive behaviour. The panel data used for this analysis is discussed in more detail in chapter 8.1.

A further data source used in chapter 4.4.4 is a sociological survey performed as part of the research project "Family, Employment and Education"[2] [*Rodina, zaměstnání a vzdělání - RZV*]. The project consisted of a series of empirical surveys from 2006 focused on the specific stages of the life cycle. The aim of the research project was to identify individual requirements and the chances of balancing the three spheres - family, employment and education - within families and family relationships. Six separate surveys were carried out and differ according to the target sample: 1. Singles, 2. Young families, 3. Families with school-age children, 4. Families after the departure of children, 5. One-parent families, and 6. Couples with small children (both parents were interviewed). In chapter 4.4.4 data from the survey of couples with small children is used and referred to by the abbreviation RZV 2006.

Data sources used for analysis are indicated directly below tables and figures or in the text.

[2] Joint project of the Research Institute for Labour and Social Affairs (RILSA) and Masaryk University.

4. Context of reproductive behaviour in the Czech Republic – socio-economic changes, family policy and the increasingly important issue of work-life balance

Czech society has undergone social, economic, and political transformation during the last 20 years following the collapse of the totalitarian socialist regime. The transformation was a complex process of structural and institutional changes that had a substantial impact on the attitudes and views of society as well as on the living conditions and behaviour of the population.

This chapter presents a basic overview of societal changes that occurred over the last decade of the 20th century. These trends are contrasted with previous development in the Czech Republic (Czechoslovakia) since the societal context (e.g. population climate, family policy measures, economic and labour market conditions as well as the socio-professional structure of society) lies firmly behind demographic behaviour and changes in reproduction and fertility (analysed in chapter 5).

This chapter focuses primarily on the period from the end of the Second World War to the present. Attention is devoted principally to the changing social structure of the population, the educational structure, the structure of households and families and particularly to the social protection system and family policy. The chapter does not contain an analysis of economic development since it goes well beyond the focus of this study; however many of the societal changes analysed hereinafter have been driven by economic development.

The chapter indicates that shifts in fertility trends were rooted in the fundamental economic, social and cultural transformation which affected the character of partnership and family relations, influenced educational and employment performance, intensified the conflict between employment and parenthood and strengthened the problem of work-life balance in society.

4.1 Socio-economic changes and the social structure

The labour market in socialist Czechoslovakia was characterised by over-employment and officially non-existent unemployment. At the start of the transformation period both the shift of a large part of the labour force from industry and agriculture into the expanding services sector and the growth in private enterprises brought about a decline in production and employment and a rise in unemployment (which was however much slower than the decrease in employment). The changing labour market was also characterised by an increasing share of people with higher education and qualifications and by changes in the occupational structure which reflected modernising trends regarding new technologies.

The intensity of the transitions between the socio-economic categories of the employed, unemployed and economically inactive (students, women on parental leave, women or men homemakers, disability pensioners, old-age pensioners) acts as an indicator of the openness of the labour market and indirectly also reflects the dynamics of the entire economy (Kuchařová et al.

2009a). These shifts are dependent on the development of basic structural characteristics, which include demographic factors (especially age) and the structure of industrial branches (some industries diminished while others grew in significance), educational structure (rising education levels and changing amount of time devoted to education), and occupational structure (a decrease in low-qualified labour and a rise in work opportunities requiring higher qualifications).

From the middle of the 1990s the proportion of employed in the population decreased, mainly due to the gradual increase in unemployment. In the first half of the 1990s the unemployment rate was around 3 per cent and the subsequent increase (to 9.9 per cent in 2003) was connected with the onset of the economic recession which affected the Czech Republic and its trading partners (namely Germany and the EU in general) and with the growing strength of the Czech crown. Long-term unemployment became a specific problem as early as in 1998 when the share of people unemployed for more than a year began to increase, reaching more than 50 per cent of total unemployed in 2005 (Kuchařová et al. 2009a).

The general unemployment rate was higher among women than men due particularly to the restructuring of branches of the economy that traditionally employed more women than men. In addition, family duties and care for children and the household attributed traditionally to women increased the risk of their losing their jobs or made their returning to the labour market after childbearing more difficult. Further differentiating factors of the unemployment rate consisted of age and level of education since young people (especially new graduates) and people with basic (or uncompleted) education were among the groups most at risk of unemployment.

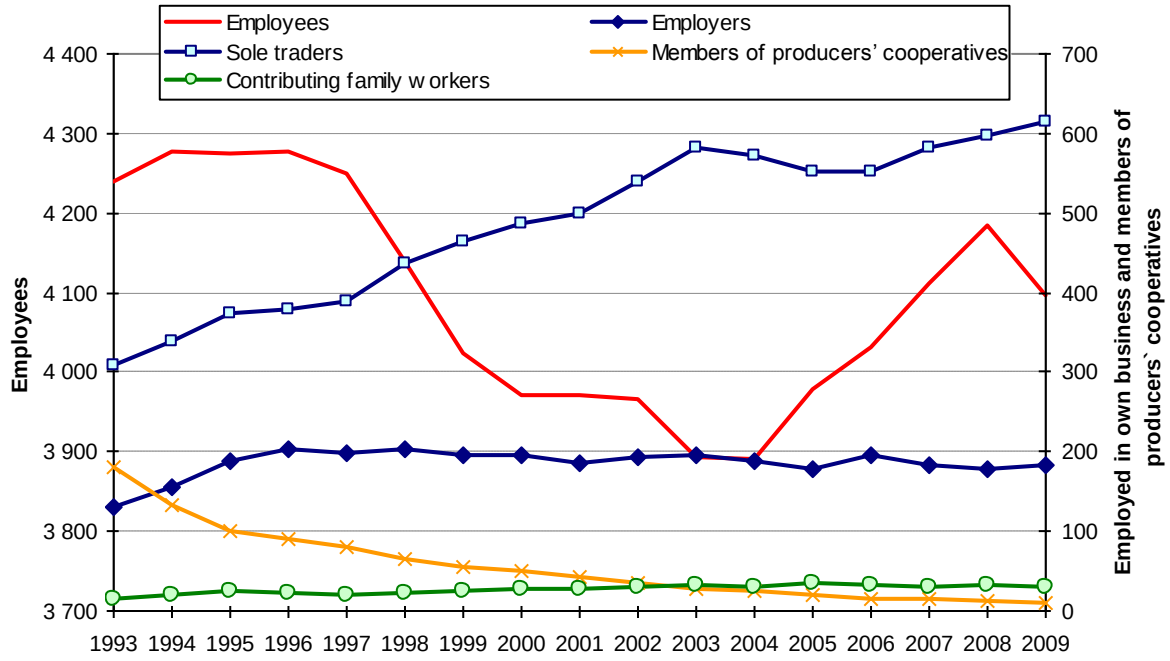
The socio-economic changes of the 1990s led to the increasing social differentiation of Czech society. Until 1989 social differences were suppressed by intervention in the structures of both education and employment and by means of a high level of income redistribution. The support of working-class hegemony and efforts to suppress the middle classes resulted in a continuously high and even increasing share of manual workers in society[3]. Such intervention resulted in status inconsistency; hence the indicators of an individual's status - such as education, job complexity, income, power status and culture - were inconsistent (Tuček et al. 2003: 212). However, social differences did exist despite the statistical data to the contrary and were partly connected with (non)membership of the nomenclature and partly with how much a person was able to profit from the grey economy and other unofficial forms of redistribution (Šanderová 2000: 158 cf. Kuchařová et al. 2009a). The limited degree of structural mobility was a particular feature of society before the political changes took place.

In comparison with the considerable income and status equality of Czech society at the start of the transformation, a wide diversification of income sources was observed over the course of the 1990s. Income from economic activity and capital became more significant for households, while the share of social income in the household budget decreased (Kuchařová et al. 2009a) and significant differences became apparent between households in terms of household income. The best-paid employment branches today include banking, business and real estate, and the worst-paid include agriculture, health care, accommodation and catering (Kuchařová et al. 2009a).

[3] Kuchařová et al. (2009a) note that this increase partly corresponded to reality, but was partly achieved through artificial means by altering the classification of job categories.

In the 1990s the socio-professional structure of the population gradually changed. It was affected by the emergence and growth of new professional categories of small, mid- and large-scale entrepreneurs and self-employed persons. After a period of rapid development of the private sector in the 1990s, changes in the structure of the economically active population took place with less intensity after 2000 (Figure 4.1). The development of the most numerous group - employees[4] - was the same as the development of employment in the Czech Republic. The number of employees decreased steadily up to 2004, however from 2005 the number increased rapidly and in 2008 the number of employees reached the highest level in 10 years with 4 184 000 employees (about 217 thousand more than in 2002). However, employees were most adversely affected by the world economic crisis which led to a decrease in the number of employed of 87 thousand in 2009.

Figure 4.1 The structure of the economically active population by socio-professional status (CZ-ICSE), 1993-2009, (in thousands)



Note: Employees are all persons with a formal relationship to a job (in current legislation, i.e. with an employment contract or by nomination or election), regardless of whether they really worked or not in the reference week. According to ILO the armed forces (professionals and up to 2004 conscripts on military service) are included among employees; this group is included in total employment in the national economy. The "employed in own business" category is made up of "employers" category (self-employed with employees) and sole traders (self-employed without employees); this category also includes family employees regardless of the number of hours worked during the reference week.

Source: CZSO- Labour Market in the Czech Republic 1993 – 2009
(http://www.czso.cz/csu/2010edicniplan.nsf/engpubl/3103-10-)

Membership of producer cooperatives declined steadily over the period in question reaching a total of 10 thousand in 2009. This reduction was influenced by both the development of agricultural production and the transformation of agricultural producer cooperatives to private companies with employees. The total number of entrepreneurs – employers and sole traders sometimes with family employees – has increased during the period monitored. In 2004 and 2005, however, a decrease in the number of self-employed both with and without employees was detected. A turn around in this respect

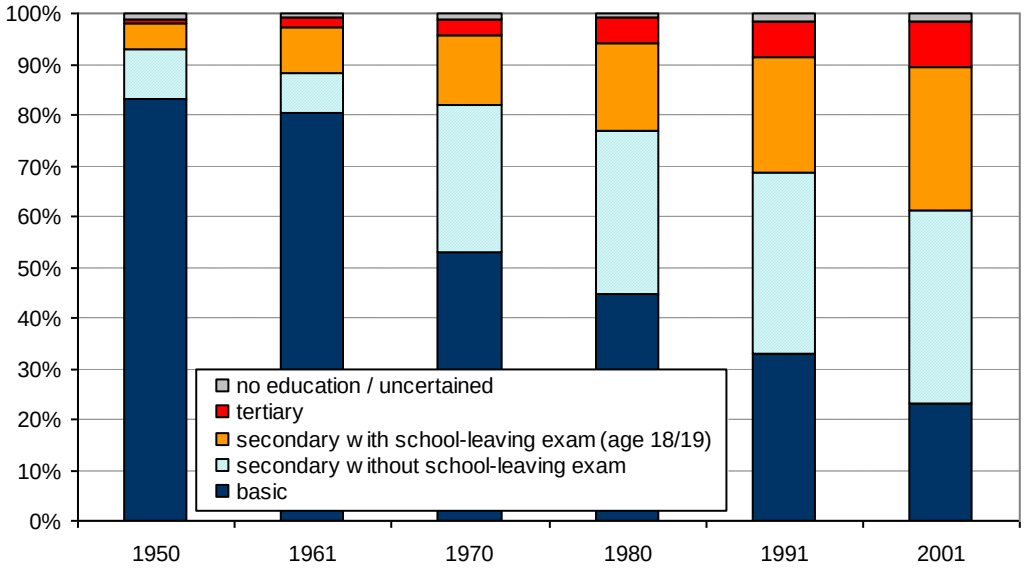
[4] Employees comprise more than 80% of the economically active population in the Czech Republic.

in 2006 was influenced by positive economic development and policy measures introduced to support the private sector. The number of self-employed reached an all-time maximum of 614 thousand in 2009. The number of family employees has increased only slightly and the number of self-employed with employees has not changed notably. Today, the share of sole traders comprises 12 per cent (2009) and the share of employers (self-employed with employees) amounts to 4 per cent of the economically active population.

4.2 The educational structure in the Czech Republic

In the middle of the 20th century (1950) the majority of the population (83 per cent) over the age of 15 had at least had a basic education. Around 10 per cent of the population had vocational or secondary education without the school-leaving exam at age 18/19, 5 per cent had secondary education with the school-leaving exam at age 18/19 (*"maturita"* examination) and only 1 per cent of the population over the age of 15 had had a university education[5]. In the second half of the 20th century the proportion of people with higher education began to grow relatively quickly, mainly because a wider share of the population gained access to vocational secondary education as well as to secondary education with the school-leaving exam at age 18/19. However only in the 1970s did the share of school-leavers obtaining a secondary education and higher start to rise. In the state-socialist regime blue-collar jobs were preferred, and therefore access to secondary education with the school-leaving exam at age 18/19 (*"maturita"*) and particularly tertiary education was considerably limited. 1989 thus signified an important change concerning educational opportunities for young people. The number of secondary and university students started to increase steadily and therefore an increasing proportion of highly educated people could be detected in the youngest cohorts.

Figure 4.2 The educational structure of the population, 1950-2001



Note: Population aged 15 and over.
Source: CZSO – Population Census 1950, 1961, 1970, 1980, 1991 and 2001.

[5] See Appendix 1 Organisational Chart of the Education System in the Czech Republic.

A further change involved the gradual levelling out of gender inequalities in terms of educational levels and the general improvement in the educational levels of women. Currently the educational level of women is growing faster than it is for men since more women than men complete secondary education with the school-leaving exam at age 18/19 ("maturita" examination) and between 1993 and 2005 the share of women with merely a basic education decreased by ten percentage points (Kuchařová et al. 2009a: 52). The increase in the educational level of Czech society is driven by rising levels among young generations. However, the proportion of university-educated people remains still much lower than the average for Western Europe. In 2009, 14 per cent of men and 12 per cent of women aged 15 and over had had a university education.

The changing educational structure of the Czech population is closely connected with important changes within the Czech educational system and the supply and accessibility of study opportunities for those interested.

Since 1990 the system of education in the Czech Republic has undergone important changes. The main modifications and additions to the School Act implemented from 1990 to 2004 can be summarised as follows (European Commission 2008: 25):

- Compulsory education was shortened from 10 to 9 years, while the eight-year basic school was extended to nine years (a five-year first stage and a four-year second stage).
- The legal provision laying down a uniform ideological orientation for education was abolished and a certain degree of curricular and pedagogical autonomy was introduced, the differentiation of instruction according to ability and interests was legalised, selection was introduced into compulsory education and so-called multi-year secondary schools (*"gymnázia"*) were established.
- A new type of post-secondary education was introduced – tertiary professional schools (*"vyšší odborné školy"*) replaced the former post-secondary studies (*"pomaturitní studium"*) which offered studies towards a qualification, specialisation or innovation and was considered to be upper-secondary education. Tertiary professional schools were introduced in the 1992/93 school-year on an experimental basis and since 1995 they have been part of the educational system (UIV 2009). Their aim was to fill the gap in qualification needs between secondary and tertiary education.
- Supply was shifted from vocational training to schools leading to the school-leaving exam at age18/19 (*"maturita"*) and from technical to economic, business and service subjects. Many new schools have been established, in spite of a decline in the population and consequently the number of pupils as well as geographic accessibility has improved.
- Schools have become legal entities with a high level of autonomy.
- It has become possible to establish non-public schools, i.e. denominational and private schools (with the right to charge fees).
- In 1990 a new Higher Education Act was passed and restored autonomy and academic freedom to higher education and, by reducing state interference to a minimum, provided higher educational institutions (university and non-university) with a high degree of independence. In

1998 a further act was passed due to the rapid development of the tertiary sphere which introduced an important change: state institution status was limited only to military schools and schools run by the Ministry of the Interior, while other institutions became public institutions with increased autonomy. It became possible to establish private institutions.

In accordance with legislation compulsory school attendance in the Czech Republic starts at the beginning of the school year following the day on which the child reaches the age of 6 and lasts for 9 years. All pupils start in a basic school and after completing the first stage (5 years) there are basically three options for continuing compulsory school attendance. It is possible to continue in education at a basic school, or to move to a secondary education which provides a general education (6- or 8-year *"gymnasium"*) or to a conservatoire (*"konzervatoř"*) for pupils gifted in the arts. According to the Ministry of Education, Youth and Sports (2008) today approximately one tenth of pupils in a given age group fulfil compulsory school attendance via secondary schools or conservatoires.

Secondary education in the Czech Republic - according to the international classification relates to the **upper-secondary educational level** (ISCED 3) - comprises three main educational programmes (see Appendix 1): a) secondary education (*"střední vzdělání"*); b) secondary education leading to an apprenticeship certificate (*"střední vzdělání s výučním listem"*); c) secondary education completed by the school-leaving examination (*"střední vzdělání s maturitní zkouškou"*).

Secondary education is mostly conducted in secondary schools and they provide either general education or vocational (professional) education always with a substantial share of general education. According to the most recreant data (UIV 2009) most pupils study four-year general or technical courses (ISCED 3A) completed with a school-leaving examination (*"maturita"*) that enables them to enter the tertiary level of education. Others study apprenticeship courses (ISCED 3C) and a small number of students simple secondary education courses. Art education is offered by conservatoires and students of this type of school predominantly acquire a "tertiary professional education at a conservatoire" (*"vyšší odborné vzdělání ukončené absolutoriem"* - ISCED 5B) but they can also take the school-leaving examination which allows them to attain secondary education completed with the school-leaving examination (ISCED 3A).

Secondary schools also provide follow-up courses (*"nástavbové studium"*) for those who attained secondary education leading to an apprenticeship certificate in a related educational field through a three-year course in full-time education. Follow-up education lasts two years full-time and is completed by the school-leaving examination.

Tertiary education comprises tertiary professional schools (*"vyšší odborná škola"*, ISCED 5B), and higher education institutions. An applicant is qualified to study at tertiary education institutions after having completed secondary education with a school-leaving examination (ISCED 3A) and after fulfilling the requirements of the admission procedure specified by the given institution. Tertiary professional schools provide students with advanced technical knowledge. Their initial aim was to fill the gap in qualification needs between secondary and tertiary education. Higher education institutions consist either of universities providing all levels of study programme (Bachelor, Master's and Doctorate) and which conduct scientific, research, development, artistic or other creative activities or

non-university institutions which usually offer only Bachelor degree programmes together with research, art and other creative activities. They can also offer Master's programmes, but not doctorate programmes (European Commission 2009). In 2008/09, the ratio of the enrolled population of 19 year-olds in full-time tertiary education was 58.6% of which 90% were in higher education institutions and 10% in tertiary professional schools (UIV 2009).

For the purpose of this study the author uses four educational levels labelled and specified as follows: a) basic education (*"základní vzdělání"*) equivalent to ISCED 1 and 2A according to Appendix 1, b) secondary education without the school-leaving exam at age 18/19 (*"středoškolské bez maturity"*) equivalent to ISCED 2C and 3C according to Appendix 1; c) secondary with the school-leaving exam at age 18/19 (*"středoškolské s maturitou"*) that enables students to enter the tertiary level of education (ISCED 3A according to Appendix 1). Also follow-up courses are included in this group (ISCED 4A according to Appendix 1). d) The tertiary education category (*"vysokoškolské vzdělání"*) is made up of higher professional schools (ISCED 5B) and university education (ICSED 5A and ISCED 6 according to Appendix 1).

4.3 The structure of households and families

Changes in demographic behaviour together with new patterns and variations in individual life courses as well as changing economic conditions (unemployment, the growth of the private sector, etc.) and new trends in education accompanied with new educational trajectories since the 1990s have begun to have a significant effect on the structure and numbers of households in the Czech Republic.

Prior to 1990 the structure of households changed only slowly and development was relatively fluid and stable due to the high rate of marriage at a relatively young age, planned family policy, and the limited opportunities to obtain independent housing (Bartoňová 2005). The increase in both the number and proportion of lone-parent family households as well as one-person households was influenced by the high divorce rate[6]. Consequently, the percentage of two-parent family households has decreased, even though their numbers had been rising up to 1980 (table 4.1).

[6] The increase in the proportion of one-person households was also influenced by stagnating or only slowly improving mortality conditions amongst women and by the worsening mortality rate among men.

Table 4.1 Census households by type, 1961–2001

Household type	Households (in thousands)					% of total census households				
	1961	**1970**	**1980**	**1991**	**2001**	**1961**	**1970**	**1980**	**1991**	**2001**
Couples	2405.4	2487.5	2556.8	2512.9	2333.6	74.8	71.0	66.0	62.0	54.6
- with dependent children	1405.4	1404.4	1475.4	1395.9	1090.8	43.7	40.1	38.1	34.5	25.5
- without dependent children	1000.0	1083.1	1081.4	1117.0	1242.8	31.1	30.9	27.9	27.6	29.1
Lone-parents	249.6	306.7	325.1	434.4	576.4	7.8	8.8	8.4	10.7	13.5
- with dependent children	114.7	157.0	203.9	254.1	343.4	3.6	4.5	5.3	6.3	8.0
- without dependent children	134.9	149.7	121.2	180.3	233.0	4.2	4.3	3.1	4.5	5.5
One-person households	514.7	668.6	938.8	1089.6	1276.2	16.0	19.1	24.2	26.9	29.9
Multi-person non-family households	44.6	39.9	55.0	14.7	84.5	1.4	1.1	1.4	0.4	2.0
Family households	2655.0	2794.2	2881.9	2947.3	2910.0	82.6	79.8	74.4	72.7	68.1
Census households	3214.3	3502.7	3875.7	4051.6	4270.7	100.0	100.0	100.0	100.0	100.0

Note: dependent children – 1961 children up to the age of 14, 1970 children up to the age of 15; Censuses 1980, 1991 and 2001 economically inactive children under the age of 26.

Multi-person non-family households - in 2001 this group included households of grandparents with grandchildren; in previous censuses this group was included within the lone-parent household.

Source: CZSO - Census 1961-2001

After 1990 household structure changed under the influence of important changes in demographic behaviour (falls in the marriage and fertility rates and the postponement of entering into marriage and parenthood to a later age, the rising divorce rate, increasing life expectancy) and new lifestyle trends (the spread of cohabitation, LAT, single motherhood, single lifestyle, prolongation of the period of education and staying with parents and so on). These changes were revealed by 2001 Census data.

Table 4.1 shows increasing percentages of one-person households, lone-parent households, and couple households without dependent children between 1991 and 2001. One-person households increased by 187 thousand (17%) and represented 30% of census households in 2001. The increase in the share of lone-parent households by 33% was almost equally as high as in the previous decade in spite of a change in methodology (lone-parent households of grandparents with grandchildren were newly included within multi-person non-family households; see Bartoňová 2005). Lone-parent families were the fastest growing group of households between the last two censuses; the role of increasing divorce rates and extra-marital childbearing was of prime importance in this development (Paloncyová 2004).

The most significant change in the structure of census households in the period 1991-2001 was the decreasing number (-7.1%) and proportion (from 62% in 1991 to 54.6% in 2001) of couples, especially with dependent children (table 4.1).

In terms of the structure of these households, the share of family households with dependent children was outweighed by family households without dependent children. During the 1990s there was a decrease of more than 300 000 couples with dependent children (that is more than one-fifth of their number in 1991). The decrease in the intensity of marriage (which was not fully compensated by the increasing share of consensual unions), decreasing fertility rates and increasing divorce rates could

be seen as factors behind such change. The increasing number and proportion of couples without dependent children was mainly a consequence of the decreasing mortality rate among the elderly and is documented by the higher intensity of the formation of couple households without dependent children headed by a woman over the age of 60 (Bartoňová 2005).

During the second half of the 20th century, the share of higher-order born children decreased while the share of children born in parity one and two increased gradually. As a result the number of dependent children in the family decreased and this is particularly valid for two-parent families (table 4.2). In 1961, there were 1.82 dependent children on average living in two-parent families with children; in 1980 it was still 1.80 children. The mean number of dependent children in two-parent families had fallen to 1.67 children by 2001. In lone-parent families there are on average fewer children compared to two-parent families. In 2001 it was usual to have one dependent child in a lone-parent household while only about 6% of single-parent families had three or more children in 2001.

Table 4.2 Dependent children in family households, 1961-2001

Year	Number of dependent children* (abs.)					Number of dependent children* (%)				
	1	2	3	4+	Total	1	2	3	4+	Total
	Couple households					**Couple households**				
1961	620 986	527 738	176 228	80 493	1 405 445	44.2	37.5	12.5	5.7	100.0
1970	667 903	556 569	138 815	41 138	1 404 425	47.6	39.6	9.9	2.9	100.0
1980	544 079	725 227	172 440	33 635	1 475 381	36.9	49.2	11.7	2.3	100.0
1991	565 471	671 121	136 723	22 553	1 395 868	40.5	48.1	9.8	1.6	100.0
2001	473 680	516 536	83 726	16 828	1 090 770	43.4	47.4	7.7	1.5	100.0
	Lone-parent households					**Lone-parent households**				
1961	77 821	26 286	7 522	3 088	114 717	67.8	22.9	6.6	2.7	100.0
1970	111 334	35 841	7 580	2 277	157 032	70.9	22.8	4.8	1.5	100.0
1980	133 496	57 740	10 345	2 301	203 882	65.5	28.3	5.1	1.1	100.0
1991	165 971	73 424	12 468	2 220	254 083	65.3	28.9	4.9	0.9	100.0
2001	221 974	102 369	15 781	3 281	343 405	64.6	29.8	4.6	1.0	100.0

* dependent children – 1961 children up to the age of 14, 1970 children up to the age of 15, Censuses 1980, 1991 and 2001 economically inactive children under the age of 26.

Source: CZSO - Census 1961-2001

4.4 The social protection system and family policy

Before 1990, the basic components of social security in financial terms consisted of health insurance benefits (including benefits for mothers and families), pension insurance benefits and social assistance benefits targeting the disabled, people in social need and seniors. Despite the ideologically declared goals of equal and fair access to resources aimed at material security and support for maternity, the limited effectiveness of state social policy is clear when one considers that households of seniors and families with children had a poor standard of living throughout the period from the end of WW2 until around 1970 (Kuchařová et al. 2009a). Housing construction[7] lagged well behind

[7] Housing shortage was seen as the principal reason for decreasing fertility in the 1960s. Young married couples with one child had to wait for nine months on average for a flat. However it was still shorter period compared to couples who were waiting 18 months on average in the 1960s. Therefore recommended population measures

declared intentions to make housing more available and only after 1971 assistance for families improved together with the introduction of pro-population measures that demographers had proposed from the start of the 1960s but that had never been implemented (Kučera 1994: 59). A clear pro-natality effect (pronounced in 1973-1977) was caused by a combination of several factors: an increase in family benefits, the extension of the period of maternity leave, the expansion of housing construction, and the general rise in the living standard (Bartošová 2000: 16 cf. Kuchařová et al. 2009a). Families with children were supported by various measures such as marriage loans (with a decreasing rate of interest according to the number of children born within the marriage), tax exemptions for children, production of subsudised goods for children and baby food (Havelka 1976), housing allowances, travel allowances, etc. In addition, the network of pre-school, school and out-of-school childcare and educational facilities was further developed (Hašková 2010, Höhne 2008).

The social protection system became the subject of political interest at the start of the 1990s since the previous system of social security and its unfounded egalitarian impact had to be replaced. Therefore the Social Reform Plan was agreed and a system of social benefits based on a defined living minimum, and basic modifications to the pension system were introduced (Kuchařová et al. 2009a). Support for the unemployed and efforts to reduce the unemployment rate were moved to the competence of newly designed employment policy.

The social security system was transformed into a "three-pillar" system post 1989: social insurance (health and pension insurance), social assistance (benefits to assist people in material need), and state social support (mainly benefits for families with children). On the other hand, after the abandonment of the previous population policy, an explicitly formulated family policy concept came into being only much later, in 2005, although a number of changes (namely in the system of family benefits) were introduced in the meantime. Support for families with dependent children runs through all three pillars of social security today - maternity benefits are still provided under the social insurance system, as was the case throughout the entire post-war period, family benefits (e.g. child allowances, parental allowances) are provided by means of state social support and families with children in material need are supported by the social assistance system.

At present, the state social support system is regulated by Act no. 117/1995 Coll., on State Social Support. The term state social support indicates the benefits provided to families in socially acknowledged situations where the state partially assumes co-responsibility for a given social situation. Some of the benefits are income-tested[8]. The following benefits are provided within the framework of the state social support system: the child allowance, the parental allowance, the social allowance, the housing allowance, the birth grant, the funeral grant and foster care benefits.

The amounts of benefit and entitlement criteria have changed in recent years in an effort to improve their effectiveness, universality and targeting (the biggest changes affected the parental

towards the increase of fertility in the early 1970s were improvement of housing situation and further improvement of family allowances (Srb, Kučerák 1974).

[8] Testing for benefits entitlement is based on family-income testing. The system of state social assistance defines a family to be cohabiting parents and their dependent children living in a single household. Dependent children are children up to the age of 18 (or up to the age of 26, if they are full-time university students or disabled). Only citizens residing permanently in the Czech Republic or the EU citizens and members of their household can apply for state social assistance benefits (see more details at: http://www.mpsv.cz/en/1603#sssb).

allowance). Although they are one of the favoured components in family policy, these benefits contribute only marginally to the total family budget, and their effect in terms of supporting fertility is limited (Kuchařová et al. 2009a).

4.4.1 Brief overview of history of family policy in the Czech Republic

During the First Republic (the period between 1918 and 1938) there were already certain social policy measures in place that can be seen as family policy measures (i.e. in favour of families with children - maternity benefits, child allowances for large families, educational or supplementary allowances for married persons). However, in this period explicit family support did not play a major role in political discourse and these measures were partial measures rather than comprehensive family support.

Social changes after 1948, when the communist dictatorship rose to power, brought about changes in social institutions, including the family. The development of the Czech family was marked by the general trend of state intervention in all areas of private life. The communist regime promoted the model of the dual-earner family, in which both parents were economically active, at the expense of the provision of childcare at home. The rather extensive system of direct financial assistance for families (so-called "social assistance for families with children") and conditions for the realisation of this model (child day-care facilities, etc.) was geared towards pro-natal goals (National Family Report 2004). Pronatalist measures in Czechoslovakia were adopted in the mid-1950s in response to the declining fertility being influenced by social and economic changes after World War 2. Their effect, however, was largely diminished by the legalization of abortion in 1957. Further attempts to reverse the negative development of fertility occurred in the first half of the 1960s, but the most intense pronatalist policy measures were adopted in the late 1960s and early 1970s (Koubek 1990: 193).

These measures were targeted to provide social assistance to families and improve the living standards of economically active women and families with more children (e.g. Bartošová 1978). However such measures had also a distinctive pro-natal character since there was apparent effort to improve the demographic situation (Wynnyczuk 1969) and it was partly targeted to higher order births (second and mainly third births, Kučera 1973). Many legal measures concerning population and the family supported early entry into marriage and parenthood (e.g. Koubek 1990, Rabušic 1990, Kocourková 2002). This was particularly pronounced in the 1970s.

After the fall of the totalitarian regime in 1989, the term "family policy" appeared in various conceptual documents primarily in the Scenario for Social Reform released in 1990. The objective of social reforms was to emphasise irreplaceable family functions and the re-recognition of maternal child care. At the beginning of the 1990s, family policy was largely centred on the social protection of the family through financial transfers. Throughout the 1990s, the concept of the social welfare safety net formed the basic principle of social policy, and family support was centred on assistance for low-income families. The outcome of this approach was the social reform of the mid 1990s, with social support as a separate pillar of family benefits. Family support was strongly individualised and its decisive criteria became the social solidarity of high-income families with those on low incomes (National Family Report 2004).

In contrast to neighbouring countries in central Europe, which were developing integral family policy systems focusing on complex family support, the view of family policy as an individual form of social security or social assistance continued to prevail in the Czech Republic. Moreover, the term itself gradually disappeared from official government documents, although it remained part of some political party programmes (National Family Report 2004). In contrast, in the non-profit sector, attention devoted to the family issue continued to rise throughout the 1990s.

Only after 2002 did family policy start to be considered a separate political topic for the new coalition government. The Department of family policy and social work at the Ministry of Labour and Social Affairs (MoLSA) was established. In 2005, the National Concept of Family Policy was elaborated at the Ministry of Labour and Social Affairs and by a number of Czech experts as the first explicit family policy concept. In addition to financial assistance for families, increasing attention was devoted to individual (maternal) care for children. This led towards reforms of the parental allowance and a tendency to extend the range of pre-school day-care. These measures were intended to transform a relatively uniform model of care for children so that different social groups could choose the appropriate strategy for family behaviour and so achieve an acceptable work-life balance. Thus the Czech Republic started to approach the so-called parental choice-oriented model (Paloncyová 2009). The main objectives of current family policy include (according to the National Concept of Family Policy 2005):

- The creation of favourable conditions for families should be placed at the centre of attention of political and administrative representatives.
- The strengthening of a sense of family values and responsibility for its own performance and stability especially for subsequent generations.
- The strengthening of the economic and social sovereignty of families and family members in the labour market (through the tax system and social security) to be able to better fulfil their roles in all stages of the family cycle and for all its members.
- Family policy should be designed and developed as a long term activity of society and should be coordinated by public services in conjunction with the public sector, the private sector, experts, media and civil society as a whole.
- Effective family policies should be encouraged by research providing sufficient information about current and emerging family needs and proposing appropriate arrangements to meet their expectations.
- Family policy should be designed so that families can have as many children as they wish, and at the time they choose.
- The social handicap of children growing up in economically and socially depressed families should be minimised by means of supporting measures so that their life chances in education, the labour market and society are only negligibly different from their peers who grow up in economically and socially powerful families.
- Suitable conditions for a work-life balance should be created for parents to facilitate caring for dependent children and other family members who need such care. (Národní koncepce... 2005)

4.4.2 Types of leave and family benefits

In the first years of independent Czechoslovakia, women were entitled to maternity support for 4 weeks after delivery (this support had been provided to insured women since 1888 - even before the independent state was established in 1918). In 1920 maternity leave was extended to 12 weeks (6 weeks prior to and 6 weeks after delivery) and maternity benefits were paid during this period. From 1926, state and public employees received maternity benefits amounting to 80% of their salary for a period of 3 months (Niklíček 1993 cf. Paloncyová 2009). The concept of national insurance prepared during the years 1945-1948 resulted in Act No. 99/1948 Coll., on national insurance, which repealed all previous legislation in this area. Benefits increased and the rights of workers and other employees were equalised to a large extent (Paloncyová 2009), maternity benefits were paid for 18 weeks (Koubek 1981).

In 1957 **maternity leave** was codified in the Labour Code as a period of 18 weeks and the benefit paid amounted to 75-90% of a mother's net daily salary according to the length of sickness insurance prior to childbirth. Maternity leave was gradually extended in the following years: from 18 to 22 weeks in 1964 (35 weeks in the case of multiple births and 26 weeks in the case of a lone mother), to 26 weeks in 1968 and then again in July 1987 to 28 weeks (37 weeks in the case of lone mothers and multiple births). Since 2008 lone mothers have not been eligible to take 37 weeks; only mothers having multiple births are now eligible to benefit from this extension.

Since 1987 the Czech Republic has provided one of the longest periods of entitlement to maternity leave and maternity benefit in Europe and, indeed the world (for more details see comparative analysis e.g. Mitchell 2010). The period of entitlement to maternity benefit of 28 weeks is substantially longer than is recommended by the International Labour Organisation (according to the ILO, the recommended minimum period of financial assistance in pregnancy and motherhood is twelve weeks and a minimum of fourteen weeks is generally advised).

The basic condition for entitlement to maternity benefits is to have participated in the sickness insurance scheme for at least 270 calendar days over the two years before the date of starting maternity leave. Since 2009 a new Act has permitted the mother of the child to alternate with her husband or the father of the child in caring for the child; each of them is, in terms of caring for the child, entitled to the payment of maternity benefits for the period and under the conditions stipulated by the Sickness Insurance Act (MoLSA). This alternation is permitted from the start of the 7th week after the date of birth and the frequency of such alternation is unrestricted.

Today, maternity benefits (termed Financial Assistance in Maternity), as with other sickness insurance benefits, is calculated from a daily assessment base which is subject to reduction by means of three reduction limits. Thus there is a maximum daily limit on the amount of income that the calculation of maternity benefit can be based on. This limit disadvantages higher-income groups. The maternity benefit currently amounts to 70 per cent of the daily assessment base for both employees and the self-employed.

Additional maternity leave (termed "***parental leave***" after the year 2001) was introduced into the Labour Code in 1966 and was initially provided until the child reached the age of one. Additional maternity leave was extended to two years in 1970, and three years in 1989. In line with the pro-natal

orientation of family-related policies, paid additional maternity leave was introduced in 1970 and "**the maternity allowance**" was initially paid only to mothers with second or higher-order children. From 1970 to 1971 the maternity allowance was paid to mothers caring for a child up until the child reached the age of twelve months and at the same time for at least one older child (the condition to take care of the second child was not applied in the case of lone mothers). In October 1971 entitlement was extended in duration to the youngest child's second birthday and from 1987 a further extension was introduced up until the youngest child's third birthday. From 1985 the maternity allowance was also made available for women taking care of only one child until the age of 12 months.

In 1990 this benefit was changed to the **parental allowance** which could be paid to women or men, regardless of the birth order of the child. Nevertheless, genuine equality in access to parental leave for both men and women was established in the Czech Republic only in 2001, when the institution of **parental leave** was introduced to replace additional maternity leave. This development fully conformed to trends in EU countries where advances in the system of parental leave had occurred in the 1990s (Kocourková 2009a). Since 1995 the entitlement to parental allowance has been extended until the child's fourth birthday[9], whereas parental leave (still called additional maternity leave at that time), which is codified in the Labour Code and linked to the mandatory reservation of work positions, remained until the child's third birthday. At the beginning of the 1990s the parental allowance was designed as a tool to support care for children at home and as an alternative to employment (Kuchařová 2009: 1285). The Czech Republic applied the model of 'long parental leave', which supports the traditional male breadwinner model and allows women to stay at home with their child as long as possible. Later, these aspects and principally the length of parental allowance were questioned in connection with objectives regarding the employment of women, the difficult position of women with small children in the labour market and gender equality (e.g. Hašková 2008, Kuchařová 2009, Kocourková 2009a).

In conformity with trends in the rest of Europe and in order to make the duration of parental leave more flexible, parents have, since 2008, been able to choose one of three parental-allowance regimes differentiated by the duration of entitlement and the amount of benefit. Parental allowance is provided at four rates that are set at fixed monthly amounts according to the duration of drawing: the increased rate (11 400 CZK), basic rate (7 600 CZK), reduced rate (3 800 CZK) and lower rate (3 000 CZK). A parent may choose the "speed" at which they draw parental allowance since three models are available – parental allowance for a period of up to two, three or four years of the child. On selecting the model of support, the parent also selects the amount of the allowance:

- Faster drawing of the parental allowance: after maternity benefit, parental allowance is set at the increased rate (11 400 CZK) until the child is 24 months old; only parents who are entitled to maternity benefit of at least 380 CZK per calendar day may request this option. This "short-

[9] In the mid-1990s, a significant increase in unemployment was expected due to planned restructuring measures in the market. According to Víšek (2006, c.f. Hašková, Maříková, Uhde 2009) the option of prolongation of the period of parental allowance was emphasized by the World Bank as one of the possible strategies of how to relieve pressures in a changing labour market. Because of this and other state regulations there was a relatively slow increase in unemployment in the Czech Republic in the early 1990s (compared to a number of other post-communist European countries).

term" option is designed for women who want to return to work earlier than the standard three-year period.

- Standard drawing of parental allowance – after maternity benefit, parental allowance is set at the basic rate (7 600 CZK) until the child is 36 months old; only parents who are entitled to maternity benefit may request this option.
- Slower drawing of parental allowance – after maternity benefit or from the birth of the child (if the parent is not entitled to maternity benefit) parental allowance is set at the basic rate (7 600 CZK) until the child is 9 months old and then at the reduced rate (3 800 CZK) until the child is 48 months old.

Paternal leave has not yet been established in legislation. However, after 1990, the **father** of the child can also benefit from the parental allowance, although employed fathers have been entitled to take paid parental leave only since 2001. Parental leave does not stipulate any 'quota' for fathers and only a tiny minority of men in the Czech Republic choose this option - the proportion of parental allowances paid to men has never exceeded 2 percent (e.g.: 1.4 percent in 2005 and 1.55 in 2009) (MoLSA: State Social Support Benefits Database).

Today the nature of the parental allowance in the Czech Republic is rather different from what would correspond to the allowance parents are entitled to in other European countries (Kocourková 2009b). Since 2004 parents have been entitled to work without any restrictions while collecting the parental allowance and under certain conditions they can also place their child in day care. Thus the parental allowance could be seen as a benefit for caring for children up to the age of four.

Table 4.3 Legislation of childcare leave and benefits since 1948

Year	Maternity leave	Financial assistance in maternity / Maternity benefit	Additional maternity leave / parental leave	Allowance (maternity/parental allowance)
15.5.1948		18 weeks of sick pay		
1.1.1957	**18 weeks for mothers**, usually 4 weeks before and 14 weeks after childbirth	75-90% of the individual net daily salary according the length of sickness insurance prior to childbirth		
1.4.1964	**22 weeks** (26 weeks for lone mothers and 35 weeks in the case of multiple births), usually 4 weeks before expected childbirth	18 weeks at 75-90% of the individual net daily salary according the length of sickness insurance prior to childbirth + 4 weeks at a lower rate (40-60% according to the birth order of child)	Additional maternity leave for mothers until the **child's 1st birthday**	unpaid
1.7.1968	**26 weeks** (35 weeks for lone mothers and in the case of multiple births), usually 4 weeks before expected childbirth	90% of the individual net daily wage (remunerated for working days lost)		
1.1.1970			Additional maternity leave until the **child's 2nd birthday**	
1.7.1970				**Maternity allowance until the child's 1st birthday for mothers taking care of at least two children** (or of one child in the case of lone-mothers or if the child is disabled) 500-1 200 CZK according to the number of children up to the age of one (600-1 300 CZK from 1.2.1982)
20.10.1971				**Maternity allowance until the child's 2nd birthday** for mothers taking care of **at least two children** (or of one child in the case of lone-mothers or if the child is disabled or adopted)

Year	Maternity leave	Financial assistance in maternity / Maternity benefit	Additional maternity leave / parental leave	Allowance (maternity/parental allowance)
1.1.1985				**Maternity allowance until the child's 1st birthday for mothers taking care of one child and until the child's 2nd birthday for mothers taking care of at least two children** (or of one child in the case of lone-mothers or if the child is disabled or adopted or in the case of women whose husband is not economically active because of disability or studies). Also **lone fathers** or fathers whose partner was not able to take care of the child because of health or other serious reasons were entitled until the child's 2nd birthday.
1.7.1987	**28 weeks** (37 weeks for lone mothers and in the case of multiple births), usually 6 weeks before and 22 weeks after childbirth	90% of the individual net daily wage, **lone father** entitled to the benefit but only for 22 weeks (after childbirth)		Maternity allowance until the child's 1st birthday for mothers taking care of one child. Maternity allowance **until the 3rd birthday** for children born after 31.12.1987 of mothers taking care of at least two children (or of one child in the case of lone-mothers or if the child is disabled or adopted or in the case of women whose husband is not economically active because of disability or studies)
1.1.1989			Additional maternity leave up to the **child's 3rd birthday**	
1.10.1990				Maternity allowance transformed into **parental allowance**. Parental allowance is paid to one of parents **until the child's 3rd birthday** (with no restrictions concerning number of children). In case of disabled children, parental allowance until the child's 7th birthday. There was restriction of the extra income for caring parent (a very low cap was set on the amount), the child could not be placed in a public childcare facilities. 900 CZK* regardless of the number and age of children.
1.1.1993		67% of the individual **daily assessment base (based on the gross daily wage base** remunerated for calendar day)		

Year	Maternity leave	Financial assistance in maternity / Maternity benefit	Additional maternity leave / parental leave	Allowance (maternity/parental allowance)
1.1.1994		69% of the individual daily assessment base		
1.10.1995				**Parental allowance until the child's 4th birthday** (a low cap was set on the amount of permissible income from employment, no access to public childcare facilities was allowed). The amount of parental allowance was connected to minimum living expenses of an adult person.
1.1.1998				Parental allowance until the child's 4th birthday, **limited access** (maximum 3 days per months) **to public childcare facilities was allowed**.
1.10.1999		69% of the individual **daily assessment base which is subject to reduction (3 reduction limits)**		
1.1.2001			Additional maternity leave renamed to **parental leave** - also **fathers are allowed to take parental leave** after the birth of a child (mothers take parental leave after the maternity leave) linked to the mandatory reservation of work position	**Limited access to public childcare facilities was extended** up to maximum 5 days per months (since 1.10.2001).
1.1.2004				**Unlimited income from gainful employment** allowed when profiting from the parental allowance.
1.1.2006				**Access to public childcare facilities extended to 4 hours per day for children aged three**. For younger children the maximum remained at 5 days per months.
1.1.2007	28 weeks (37 weeks in the case of multiple births), **no exceptions for lone mothers**	The extended length of taking maternity benefit for lone mothers (37 weeks) remained because of postponement of the force of given legislation		

Year	Maternity leave	Financial assistance in maternity / Maternity benefit	Additional maternity leave / parental leave	Allowance (maternity/parental allowance)
1.1.2008				**Three "speeds" of drawing parental allowance** are available – parental allowance for a period of up to 2nd, 3rd or 4th birthday of the child. Parental allowance is provided at four rates that are set at fixed monthly amounts according to duration of drawing.
1.1.2009		70% of the individual daily assessment base, **fathers** allowed to take the benefit instead of mother, **only 28 weeks of maternity benefit for lone mothers**		

Note: * for the amount of maternity/parental allowance and its valorisation during the 1990s see table 4.4.

Source: Codes of Law 1948-2009, Koubek 1981, Paloncyová 2009, Hašková, Maříková, Uhde 2009

Table 4.4 Selected indicators – average wages, maternity leave benefit and parental allowance 1990-2010

	Unit of measurement	Year	In abs. figures	Increase/ decrease in % *
Average gross monthly nominal wage for actual persons	CZK	1990	3 286	3.7
		1991	3 792	15.4
		1992	4 644	22.5
		1993	5 817	25.3
		1994	6 894	18.5
		1995	8 172	18.5
		1996	9 676	18.4
		1997	10 691	10.5
		1998	11 693	9.4
		1999	12 666	8.3
		2000	13 476	6.4
		2001	14 624	8.5
		2002	15 767	7.8
		2003	16 752	6.2
		2004	17 869	6.7
		2005	18 763	5.0
		2006	19 998	6.6
		2007	21 452	7.3
		2008	23 280	8.5
		2009	24 094	3.5
Maternity leave benefit - end of period **	in % of daily wage (max. of CZK)	1990	90 (150)	0.0
		1991-1992	90 (180)	0.0 (20.0)
		1993	67 (190)	x
		1994-1998	69 (270)	3.0 (42.1)
		1999	69 (468)	0.0 (73.3)
		2000	69 (514)	0.0 (9.8)
		2001	69 (550)	0.0 (7.0)
		2002-2005	69 (606)	0.0 (10.2)
		2006	69 (642)	0.0 (5.9)
		2007-2008	69 (694)	0.0 (8.1)
		2009	70 (1375)	1.4 (98.1)
		2010 (1.1.)	70 (1384)	0 (0.7)
Parental allowance (monthly) - end of period ***	CZK	1990	900	0.0
		1991-1992	1 200	33.3
		1993	1 360	13.3
		1994	1 740	x
		1995	1 848	6.2
		1996	2 112	14.3
		1997	2 222	5.2
		1998-1999	2 343	5.4
		2000	2 409	2.8
		2001-2003	2 552	5.9
		2004	3 573	40.0
		2005	3 635	1.7
		2006	3 696	1.7
		2007	7 582	105.1
		2008-2010	3 800-11 400	–49.9-50.4

Notes: * as compared with the same period of the previous year (in case of legislative data as compared with the previous situation)

** till 1992 based on net daily wage, remunerated for working days lost; beginning 1993 based on gross daily wage, remunerated for calendar days. In parentheses - maximum of CZK per day.

*** since 1994 newly including compensation benefit (for increase of prices); till 2003 being remunerated to that person of the couple who, due to the care of the child, cannot be employed, since 2004 to that person of the couple who cares of the child (namely the possibility of having a job without any limitation of level of income), firm amount not depending on number of children being taken care of - till 2006 based on parent's subsistence level, in 2007 based on average monthly wage in non-business sector, since 2008 at higher level of 11 400 CZK up to 2 years of child's age, at basic level of 7 600 CZK up to 3 years of child's age or at lower level of 3 800 CZK up to 4 years of child's age, according to conditions of Act 117/1995 of state social support

Source: Höhne et al. 2010b

The most common state social support benefit (formerly a health insurance benefit) is the **child allowance benefit** provided to families with dependent children. The structure and amount of this benefit developed in relation to the degree of pro-natal objectives in the state social policy and in relation to analyses of expenditure on children (Table 4.5 and 4.6). Not only has the amount of the child allowance undergone profound changes but also entitlement to the benefit has varied. Until 1992 the child allowance was paid in relation to the number of dependent children in the family, from 1993 to 1995 it was paid per child according to the child's age and from 1996 it was paid according to the age of the child and according to the income of the family decreasingly in relation to the amount of family income – expressed in the form of coefficients of the subsistence level (as 3 times the equivalent of the subsistence level (till 2006), 4 times (in 2007), 2.4 times (in 2008), 2.5 times (in 2009), 2.4 times since 2010). Additionally three different rates of allowance have been implemented since 1996 - the increased rate (the family income does not exceed 1.1 times the subsistence level - allowance per child was 32% of the child's subsistence minimum); the basic rate (the family income was from 1.1 to 1.8 times the subsistence level - allowance per child was 28% of the child's subsistence minimum), and the reduced rate (the family income was from 1.8 to 3 times the subsistence level - allowance per child was 14% of the child's subsistence minimum). Table 4.6 outlines changes made to the thresholds and amounts of child allowance benefit.

Since 2008 a single income limit of entitlement for child allowance was introduced. Today only dependent children living in a family with an income of less than 2.4 times the family's living minimum are entitled to this allowance. The allowance is provided on three levels, depending on the age of the child.

Kocourková (2009b) show that the trend observed in respect to this policy measure is rather unique in Europe, since in most states efforts are made to retain the universal character of this benefit. The child allowance, which was traditionally regarded as the most important benefit targeting families with children, has assumed the character of a social benefit in the Czech Republic.

Table 4.5 Child allowance and average wage, 1949-1993, (in CZK)

Year	Number of children							Each additional child	Average monthly wage CZK
	1	2	3	4	5	6	7		
1945-47	30	60	90	120	150	180	210	30	.
1947-49	30	70	120	180	250	330	420	100	834
1949-53	38	86	144	212	290	378	420	108	1 034
1953-57	70	170	310	470	630	790	950	160	1 214
1957-59	70	170	310	490	710	930	1150	220	1 306
1959-68	Allowance amount in relation to the breadwinner's income - 5 categories of benefits and the limitations on entitlement among the wealthier*								1 420
1968-72	90	330	680	1 030	1 270	1 510	1 750	240	1 946
1973-79	90	430	880	1280	1 520	1 760	2 000	240	2 381
1979-82	140	530	1 030	1 480	1 770	2 060	2 350	290	2 650
1982-86	180	610	1 150	1 640	1 970	2 300	2 630	330	2 837
1986-89	200	650	1 210	1 720	2 070	2 420	2 770	350	3 054
1990-93	200	650	1 210	1 720	For each additional child 350 CZK				3 286 – 5 904

Note: *with income of 3 001-3 800 CZK there was no entitlement to the allowance in the case of there being just one child, with an income above 3 800 CZK the entitlement began once there were three children in the family; with an income of 1 401-2 200 CZK the amount ranged from 70 to 1 360 CZK

Source: Koubek 1981, Kučera 1994, Kuchařová et al. 2009a

Table 4.6 Child allowance benefit, 1993-2011 (in CZK)

Year (since)	Increased rate				Basic rate				Reduced rate			
	Age of the child				Age of the child				Age of the child			
	0-6	6-10	10-15	15-26	0-6	6-10	10-15	15-26	0-6	6-10	10-15	15-26
1.11. 1993	x				340	380	450	490	x			
1.1. 1996	423	468	554	608	370	409	485	532	185	205	243	266
1.10. 1996	452	500	592	650	395	437	518	569	198	219	259	285
1.7. 1997	474	525	621	682	415	460	544	597	208	230	272	299
1.10.1997	x				400	443	524	576	208	230	272	299
1.4.1998	x				422	468	554	608	219	243	287	315
1.1.1999	500	554	656	720	437	485	574	630	219	243	287	315
1.4.2000	512	570	676	740	448	499	591	647	224	250	296	324
1.10.2001	541	605	714	784	474	530	625	686	237	265	313	343
1.1. 2005	551	615	727	797	482	538	636	698	241	269	318	349
1.1. 2006	560	624	739	810	490	546	647	709	245	273	323	354
1.1. 2007	576	706		810	496	608		698	256	314		360
1.1. 2008	x				500	610		700	x			
1.7. 2009	x				550	660		750	x			
1.1. 2011	x				500	610		700	x			

Note: Since 1996 three different rates of allowance according to the family income: the increased rate (the family income does not exceed 1.1 times the subsistence level, allowance is 32% of the child's subsistence minimum); the basic rate (the family income 1.1 - 1.8 times the subsistence level, allowance is 28% of the child's subsistence minimum), and reduced rate (the family income 1.8 - 3 times the subsistence level, allowance is 14% of the child's subsistence minimum). In 1998 the limits for family income was 2.2 and 1.8 times the subsistence level, in 2007 it was 1.5, 2.4 and 4 times the subsistence level (with the allowance reached 36 %, 31 % and 16 % of the child subsistence level. After January 2008 the limit for family income was 2.4 times the subsistence level.

Source: Codes of Law 1948-2009, Kuchařová et al. 2009a, Paloncyová 2009, Kocourková 2006

4.4.3 Childcare facilities

After 1989 the system of services for families with dependent children underwent important changes. Before 1990 the communist regime supported such services because of its preference for the collective raising of children and in the interest of keeping a large share of women in the workforce.

In the 1950s, the political priority was to encourage women to work in a national economy which was facing a labour shortage. To support the full employment of women and facilitate their earlier return to work after childbirth, an extensive network of subsidised childcare facilities was established between the 1950s and the 1980s (Kocourková 2002, Kantorová 2004b).

The number of kindergartens (for children aged 3-5) and nurseries (for children under the age of 3) increased in the 1950s and there was an increase in the proportion of children of the respective age groups attending these facilities. The percentage of children under three in nurseries increased from 3% to 13% between 1950 and 1970. The percentage of 3-5-year old children in kindergartens increased from 26% to 56% during the same period (Hašková 2010). Together with the increasing proportion of children attending childcare facilities the length of attendance was increasing - whereas in the late 1940s 80% of children attended kindergartens only for half a day, in the late 1950s only 12% of children attended for half a day and from the second half of the 1960s almost all kindergarten children attended childcare facilities for the whole day (Hašková 2010).

However, Czech society maintained a rather sceptical view of nurseries. Research from the second half of the 1950s suggests that only one third of employed pregnant women and mothers of children younger than one year of age placed or would have placed their child in a nursery if there had been one in the vicinity (Srb, Kučera 1959 cf. Hašková, Maříková, Uhde 2009: 86). The reason for the scepticism was the high incidence of disease in small children which had a negative impact on female labour participation due to the necessity to take care of their children (ibid.: 86). It all led to further criticism of working mothers who were regarded as an unreliable labour force and to enterprises and cooperatives being reluctant to provide the option of working part-time since there was fear that part-time working would further decrease already low labour productivity (Hašková 2010). In the 1960s, criticism of all-day childcare facilities for small children together with the medical and psychological debate[10] contributed to a reduction in the number of weekly nurseries as well as to the prolongation of maternity leave and the introduction of additional (unpaid) maternity leave.

Hašková (2010) stressed that criticism of all-day childcare facilities was aimed particularly at nurseries, much less at kindergartens, as the former were considered to be health and social institutions, existing only to allow mothers to work. Kindergartens, on the other hand, were, with regard to their institutionalisation, regarded as educational facilities intended for pre-school

[10] Psychological studies emphasized the possible consequences of long-term stays of children in nurseries in terms of their psychological deprivation; paediatric studies pointed to the increased rate of illness of children attending nurseries.

children. Such a distinction can still be seen in debates about the appropriateness of institutional care for children of preschool age and was stressed in the 1990s when the tendency to support care for young children within the family resulted in a sharp decrease in the number of daily childcare facilities. This trend, though less dramatic, continues, even though it no longer corresponds with the increasing demand for institutional childcare (as a result of increasing fertility and the number of newborns since 2004).

The percentage of pre-school children in childcare facilities continued to increase during the 1970s and 1980s. The proportion of children aged 3-5 in kindergartens increased between the early 1970s and the late 1980s from 56 per cent to 81 per cent, and enrolment rates of the respective age group in nurseries from 13 per cent to 18 per cent as the result of the high rate of female participation in the labour force of the former Czechoslovakia.

Table 4.7 Number of nurseries (for children below 3) and nursery capacity between 1950 and 1985

	1950	1955	1960	1965	1970	1975	1980	1985
Number of nurseries	511	844	884	1 122	1 321	1 405	1 672	1 786
Nursery capacity (no. of placements)	16 321	26 718	30 711	44 917	53 272	57 634	69 828	73 224
Percentage of enrolled children	3.1	5.4	7.8	10.0	12.7	10.4	14.1	17.8

Source: Historická statistická ročenka ČSSR 1985.

Table 4.8 Number of kindergartens, capacity and enrolment rate between 1950 and 1986

	1950	1955	1960	1965	1970	1975	1980	1983
Number of kindergartens	4 359	4 593	4 732	5 162	5 582	6 203	7 396	7 592
Number of classes	6 017	6 140	7 147	8 683	10 195	12 089	15 974	16 748
Number of children	187 427	169 156	201 988	221 914	258 567	316 991	463 565	466 488
Percentage of enrolled children*	35.8	32.4	42.7	57.2	61.2	69.3	84.2	93.9

* It refers to the number of children attending kindergarten out of the total number of children aged 3 to 5.
Source: Historická statistická ročenka ČSSR 1985.

Enrolment rates in kindergartens remained high after 1990, more than 90 per cent of children aged 4-5 attend kindergartens; the enrolment rate of three years olds was 75 per cent in 2005 (Kuchařová, Svobodová 2006). In contrast, there have been changes in the public provision of childcare for children under the age of 3 (table 4.9). The number of nurseries has been considerably reduced and a shift from institutional childcare towards parental care for children under the age of 3[11] is apparent. Less than one per cent of children below age 3 were enrolled in nurseries in 2005. Today day-care facilities for children up to the age of three are rare and can only be found in cities. However, the increasing proportion of children under 3 attending kindergartens (enrolment rate 27 per cent in 2009) shows that in the case of available

[11] Most of the children in nurseries today are aged 2-3 years (54%), 23% of children are older than 3 and 22% of children in nurseries are between the ages of 1 and 2. Younger children have almost no presence in nurseries (1% in 2008) (Kuchařová et al. 2009b).

free places in kindergartens, younger (before reaching the age of 3) children are allowed to attend (table 4.10).

Table 4.9 Number of nurseries (for children below 3) and nursery capacity between 1990 and 2009

	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Number of nurseries	1 043	486	381	247	235	207	151	101	79	67
Capacity (number of places)	39 829	-	13 196	9 265	8 565	7 574	5 551	2 965	2 191	1 913
Increase/ decrease in number of places (in % between given years)	x	-	-64.9 *(1990-92)*	-29.8	-7.6	-11.6	-26.7	-46.6	-26.1	-12.7
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Number of nurseries	65	59	58	60	58	54	48	49	48	46
Capacity (number of places)	1 867	1 717	1 674	1 770	1 708	1 671	1 567	1 587	1 498	1 419
Increase/ decrease in number of places (in % between given years)	-2.4	-8.0	-2.5	***+5.7***	-3.5	-2.2	-6.2	***+1.3***	-5.6	-5.3

Note: Since 2000 nurseries and micro-nurseries also include other children's facilities. Up to and including 1999 the figures relate to nurseries and micro-nurseries only.

Source: ÚZIS –Network of health establishments in a given year http://www.uzis.cz/publikace

Table 4.10 Number of kindergartens and their capacity (number of children and number of classes) between 1990 and 2009

Number of	**1990/ 91**	**1991/ 92**	**1992/ 93**	**1993/ 94**	**1994/ 95**	**1995/ 96**	**1996/ 97**	**1997/ 98**	**1998/ 99**	**1999/ 2000**
- kindergartens	7 335	6 972	6 827	6 600	6 526	6 475	6 344	6 152	6 028	5 901
- classes	16 198	15 244	15 280	14 628	14 748	14 715	14 401	13 829	13 509	13 006
- children	352139	323270	325735	331509	338119	333433	317159	307508	302856	290192
Increase/ decrease in no. of children (% between given years)	-	-8.2	0.8	1.8	2.0	-1.4	-4.9	-3.0	-1.5	-4.2
Number of	**2000/ 01**	**2001/ 02**	**2002 /03**	**2003/ 04**	**2004/ 05**	**2005/ 06**	**2006/ 07**	**2007/ 08**	**2008/ 09**	**2009/ 10**
- kindergartens	6 007	5 881	5 795	5 067	4 994	4 834	4 815	4 808	4 809	4 826
- classes	13 196	12 970	12 881	12 797	12 689	12 409	12 494	12 698	13 035	13 452
- children	286085	282642	284950	286340	286230	282183	285419	291194	301620	314008
Increase/ decrease in no. of children (% between given years)	-1.4	-1.2	0.8	0.5	0.0	-1.4	1.1	2.0	3.6	4.1

Note: From 2000/2001: number of kindergartens includes kindergartens for children with special needs and kindergartens affiliated to institutions providing institutional education or protective education.

Source: ÚIV http://www.uiv.cz/rubrika/101

Table 4.11 Percentage of children of a given age enrolled in kindergartens between 1993/94 and 2009/10

Age	**1993/94**	**1994/95**	**1995/96**	**1996/97**	**1997/98**	**1998/99**	**1999/00**	**2000/01**	**2001/02**
Younger than 3 years	20.6	20.6	15.6	12.2	11.0	14.3	16.9	20.8	22.4
3 years	66.3	69.9	66.8	55.7	58.4	61.0	66.5	70.0	72.1
4 years	75.3	74.6	79.2	81.3	83.2	90.0	89.0	91.4	90.8
5 years	81.9	85.9	86.0	90.2	91.4	92.5	98.4	95.7	93.8
Older than 5 years	16.9	16.5	18.0	18.4	19.4	20.9	21.5	23.0	22.3
Age	**2002/03**	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**2009/10**	
Younger than 3 years	24.5	25.3	26.5	25.4	23.0	23.0	24.8	26.7	
3 years	76.4	80.0	77.3	74.6	76.6	75.3	76.5	76.1	
4 years	90.8	94.4	94.2	90.0	90.7	90.9	89.4	88.3	
5 years	94.9	96.0	96.4	95.8	93.7	93.2	92.8	91.4	
6 years*	22.5	25.0	23.8	22.7	22.3	21.6	21.0	20.6	
Older than 6 years	-	-	-	0.5	0.5	0.5	0.5	0.5	

Note: *Between 2002 and 2005, children older than 5 years; since 2005/06 without schools in health care facilities.

Source: ÚIV - Yearbook of Education in the Czech Republic 1989/90–2002/03 and 2003/04–2009/10 (Vývojová ročenka školství v České republice) http://www.uiv.cz/rubrika/101

The system of day care for children of pre-school and early-school age represents an important family policy instrument that allows a return to work for employed parents and an opportunity to apply for retraining or job search help for the unemployed. However, in order to perform this function, childcare must meet certain basic conditions: to be both financially and geographically accessible, organized according to the needs of (employed) parents and to provide services of the desired quality. A precondition for the effectiveness of the whole system of day care services is to offer the broadest possible range of types with a high degree of flexibility. In the Czech Republic day care for children of pre-school and early-school age is highly regionally unequal. According to Kuchařová et al. (2009b) the main differences are:

1) Territorial - there are differences according to municipality size; large cities benefit from a wider range of institutional day care. Discrepancies between supply and demand for day care are concentrated regionally, mostly in cities, where the discrepancy between insufficient public facilities and high employment rates is high; in small municipalities it occurs to a lesser degree.

2) In terms of forms of day care - in particular there is an imbalance between the proportion of institutional day care and alternative forms provided by the private sector and NGOs, low availability of alternatives to collective care for those parents who require individual care more similar to a family environment. Moreover, in regions with less developed institutional day care, alternative forms of care are very rare or do not exist at all due to economic and/or organizational reasons.

3) In terms of age of children - a fundamental difference exists between the enrolment in day care facilities of children under three years of age and older children. The gap between supply and demand is much larger for children aged two and three years, when some mothers want to return to the labour market, however, institutional conditions are not adjusted to their needs.

The growing discrepancy between the demand and supply of day care services for pre-school children observed during the last few years in the Czech Republic is influenced by the slowly developing private sector and alternative forms of day care. One of the barriers to the greater development of private day care is the insufficient level of motivation of employers to establish day care facilities and the absence of state support for such motivation. Moreover, company day care centres are still not common due particularly to strict regulations and legal conditions (administrative, hygienic, concerning space and facilities etc.) which are very difficult to fulfil even for large companies. Therefore the setting up of such a day care facility would be inappropriately expensive. It was not until late 2008 that the government approved the so-called "pro-family package" which contained proposals for various measures supporting families with children. Among these measures there was the possibility to expand child care services organised via a business licence for private persons and the simplification of requirements concerning hygienic and spatial conditions for institutions for the care of small groups of children. The possibility to include expenditure on the care of employees` children in tax deductible expenses for employers was also envisaged. Expected costs in connection with a tax credit for employers would be offset by the higher employment rate of parents and especially mothers with children who would thus be taxpayers and payers of social and health insurance. During 2009, however, this plan was suspended due to the government savings programme adopted in response to the world-wide economic crisis.

4.4.4 Work-life balance

Since the 1990s a trend to move care for children below the age of three partly outside the family is apparent within the European Union while a gradual adoption of measures which focus on promoting gender equality, not only in the labour market, but also in caring for children is clear. Conversely, in the same period, relatively strong emphasis has been put on moving childcare into the family in the Czech Republic (and other post-communist countries), without any support for gender equality. This so-called re-familisation process (Sirovátka, Bartáková 2008) enjoys strong support in Czech society. The process involved adherence to the traditional gender division of labour in the household (e.g. Kuchařová et al. 2006b, Svobodová 2008), a strong preference for caring for children under the age of 3 at home (e.g. Svobodová, Šťastná 2010, Kuchařová et al. 2006a) and little support for the economic activity of women with young children in the labour market, which contradicts the egalitarian family model preferred especially by men and women with higher education levels (Sirovátka 2006, Svobodová, Šťastná 2010).

Preferences and real strategies of how to ensure care for small children are reflected in a women's working career model which is characterised by relatively long breaks devoted to childrearing which are followed by a return predominantly to full-time employment. This labour-market participation model with regard to mothers differs from the situation in most other developed European countries (Sirovátka, Bartáková 2008) and is related to certain negative consequences in terms of the position of Czech mothers in the labour market. Compared to men and childless women, the position of mothers in the labour market is worsened by a long interruption in terms of contact with employment (Kuchařová et al. 2006a). The poor overall position of mothers in the labour market is not characteristic solely of the period immediately following parental leave but also later in the course of the career. For example, the unemployment rate differs relatively slightly between men and women during the period that women have a youngest child below the age of 3 (as mothers, in the main, benefit from parental leave / parental allowance at that time) but this gender gap in the unemployment rate increases to 15 percentage points when the youngest child is three years old and to 19 percentage points when the youngest child is aged 4-7 (Sirovátka, Bartáková 2008).

As a result of the extension of parental leave and the possibility of receiving the parental allowance and due to the reduction in institutional care for very young children during the 1990s, the Czech Republic has the highest negative impact of motherhood on the employment of women of all the EU countries (Höhne 2008, Křížková, Vohlídalová 2009). When comparing the employment rates of women aged 20-50, the difference between women with and without children under the age of six was almost 40 percentage points in 2005. This means that in the Czech Republic the employment rate of women aged 20-50 without small children is almost 40 percentage points higher than that of women of the same age with at least one child under the age of six[12]. The average of both the EU-15 and EU-25 was below 15 per cent in 2005 (Křížková, Vohlídalová 2008).

The same results have been revealed for women aged 20-44 with younger children at the age of 0-4 years. Moreover, table 4.12 reveals that since the mid-1990s these differences have not only persisted but even intensified. The employment rate of women aged 20-44 with a child under the age of 5 amounts to 25%, which is about 53 percentage points lower than for women with no children aged 0-4. Since 1995, the economic activity of mothers with small children has tended to decline and between 1993 and 2007 dropped from 48% to 28%, while for childless women or mothers with older children the decline was very small, i.e. 4 percentage points (from 88% to 84%; table 4.12). At the same time, the unemployment rate of these two groups of women grew steadily up until recently when the trend was reversed and began to copy the downward trend in the overall unemployment rate.

The decrease in both the participation rate and employment rate of mothers of children aged 0-4 is a consequence of (1) an extension of entitlement to the parental allowance in the mid-1990s; (2) a decline in the supply of day-care services and (3) a decline in the labour supply of mothers with small children. The increasing unemployment rate of mothers and their higher

[12] According to the Labour Force Survey.

level of unemployment compared to childless women (or women with older children) signify possible difficulties with the return from parental leave and that the choice of mothers to return to employment is not being sufficiently satisfied.

Amendments to the conditions of entitlement to parental allowances and parental leave implemented after 2004 aimed to support various work-life balance strategies by allowing unlimited income from gainful employment, while the same entitlement to the parental allowance is maintained (see table 4.3). However, the usefulness of the possibilities offered by these amendments turned out to be lower than expected mainly because of the limited supply of day-care facilities and the low level of interest of employees as well as employers in part-time work. More than 90% of employed women with no children aged 0-4 work full-time as do nearly 80 per cent of employed mothers of small children. These figures are significantly higher than in most European countries.

Table 4.12 Employment, unemployment and working conditions of women according to age of child, Czech Republic 1993-2007, selected years

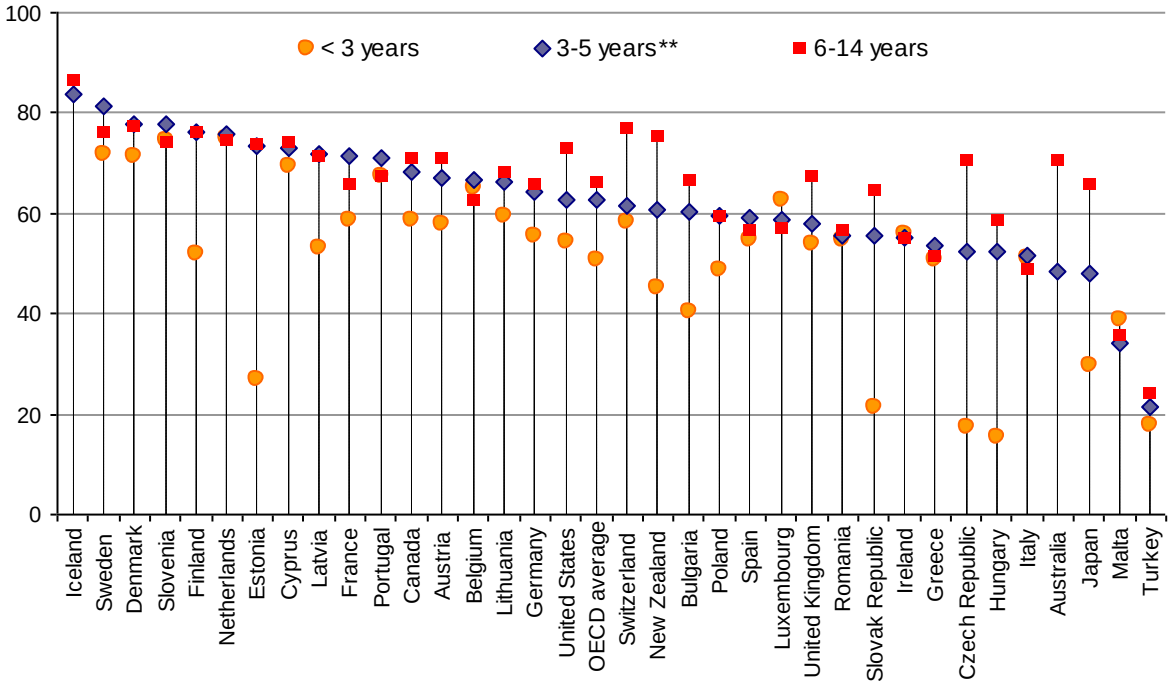
	1993	1995	1997	1998	2000	2001	2002	2003	2004	2005	2006	2007
Women aged 20-44 with children aged 0-4												
Participation rate	48.2	41.1	32.6	34.6	31.3	30.5	30.6	31.1	29.9	31.5	30.0	28.4
Employment rate	43.4	36.5	28.6	28.3	25.5	25.5	25.9	26.8	24.9	26.9	26.4	25.1
Unemployment rate	10.0	11.3	12.1	18.1	18.4	16.4	15.5	13.9	16.6	14.7	12.3	11.9
Part-time job	20.9	23.7	21.7	20.9	18.2	15.4	15.7	16.1	17.9	20.9	24.3	24.0
Women aged 20-44 without children aged 0-4*												
Participation rate	88.1	87.2	85.5	85.3	85.3	85.2	85.9	85.1	85.1	84.2	84.6	83.8
Employment rate	83.9	83.5	80.5	78.5	75.9	76.2	77.7	75.9	76.2	75.6	76.8	78.0
Unemployment rate	4.7	4.3	5.8	8.0	11.0	10.6	9.5	10.8	10.4	10.2	9.3	6.9
Part-time job	8.5	8.4	8.2	8.5	8.0	7.1	6.5	6.7	6.5	6.6	6.3	5.8

Note: * Women with a child (children of which all are) aged more than 4 or childless women.
Participation rate - the share of total labour force in the total number of women in given group defined by age and age of children.
Employment rate - the share of the employed in the total number of women in given group defined by age and age of children.
Unemployment rate - the share of the unemployed in the total labour force.
Source: CZSO – Focus on women and men

These results are also valid when comparing the Czech Republic with other countries. According to the OECD[13] the employment rate of Czech women aged 25-49 is above the OECD average (74% in 2008 compared to a 72% average for OECD countries) but is well below the average once only women with children under the age of 15 are compared (52% in 2008 compared to a 61% average for OECD countries). The below-average employment rate of women with children ranks the Czech Republic comparably with other Central and Southern European countries. However, compared with most Southern and Central European countries, the Czech Republic boasts a higher employment rate of mothers with children over the age of six (Figure 4.3).

[13] OECD Family database
http://www.oecd.org/document/4/0,3746,en_2649_34819_37836996_1_1_1_1,00.html

Figure 4.3 Maternal employment rates in OECD countries by age of youngest child, 2008* (in %)



Note: * 2007 for Sweden; 2006 for Mexico and Switzerland; 2005 for Australia, Japan, New Zealand and the United States; 2002 for Iceland; 2001 for Canada; 1999 for Denmark. ** Data for Australia and Iceland refer to mothers with a youngest child aged less than 5.

Source: OECD Family database

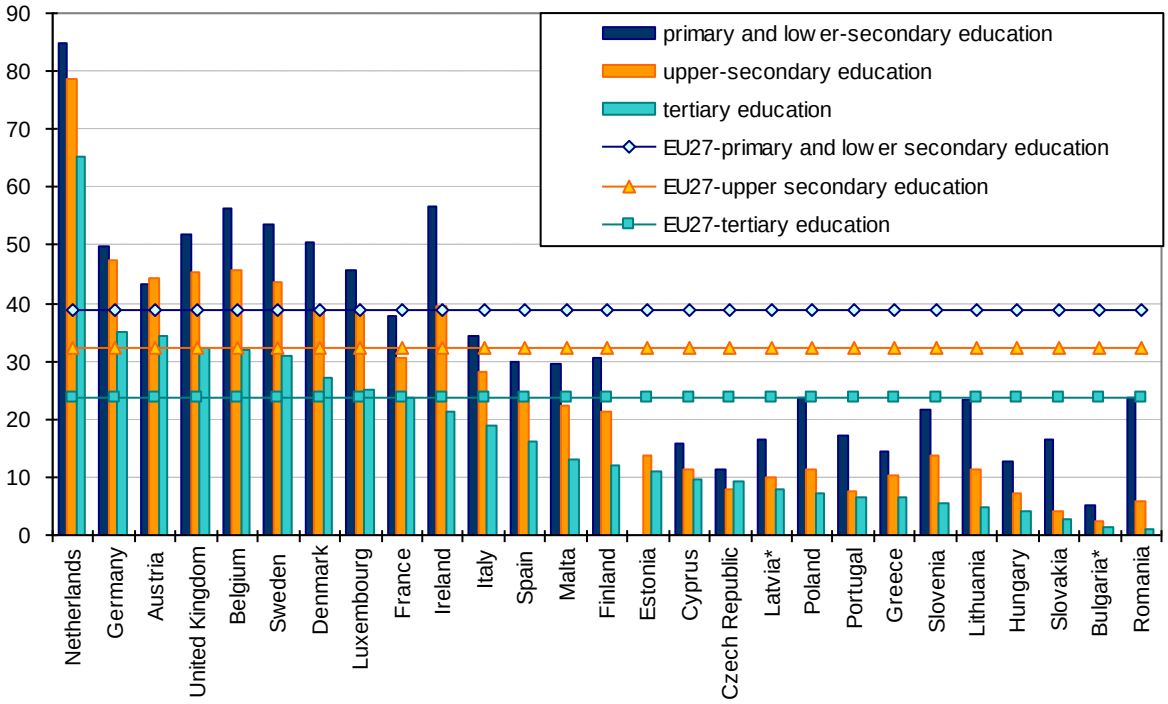
The reasons behind these results also include that the Czech social system provides mothers with long period of paid maternity and parental leave and with relatively generous financial support especially for low-income families with small children (Švarc, Švarcová 2007, Mitchell 2010) which in reality has a strongly de-motivating influence on women's employment (Kuchařová 2009: 1284).

Moreover, women after parental leave face difficulties with re-entering the labour market even though the Labour Code guarantees the possibility to return to previous employment after completing parental leave (until the 3rd birthday of a child). According to a sociological survey of employers in the Czech Republic, only 48% of mothers return to their employment after parental leave while 52% of mothers end their parental leave by terminating their previous employment (Kuchařová et al. 2006b: 73).

The most common reasons for mothers not to return to their previous employment are (a) objective reasons (company wind-up, moving, etc.) which prevented their return; (b) own decision connected with the woman not being interested in being employed, having found a more interesting job elsewhere or dissatisfaction with their job even before taking maternity/parental leave. The finding that 14% of mothers who did not return to their previous employment after taking parental leave did so because of the discriminatory behaviour of their employers is significant (Kuchařová et al. 2006b: 33).

As mentioned above, the Czech Republic differs from most EU countries in the proportion of part-time work. In 2007, 24% of employed mothers with children under the age of 4 worked part-time, however the difference applies not only to the percentage of mothers working part-time, but also to the proportion of part-time work among all employed Czech women (Figure 4.4). Czech women continue to work mainly full-time and the differentiation with respect to the highest level of education is very small. All three educational categories remain well below the European average with regard to the proportion of part-time work.

Figure 4.4 Share of women with part-time jobs as a share of the total employment of women aged 15-64 by the highest level of education, 2009 (in %)



Note: * unreliable data
Source: CZSO – Focus on women and men 2010

Moreover, studies have also discovered a discrepancy between declared values and real expectations with regard to Czech couples and families. For example Sirovátka and Bartáková (2008) demonstrated such a discrepancy by the adoption of the two-income model of the Czech family and the demand to satisfy the work expectations of women, and at the same time the strong orientation of women toward the family and motherhood. It appears that the very limited development of instruments to support work-life balance in the Czech Republic is a fundamental problem.

Within the wide spectrum of family-policy measures, most emphasis is generally devoted to children's day-care facilities and their role in terms of work-life balance. However, the Czech public still strongly favours various forms of financial support for families with children. In terms of preferences declared by Czech parents in several surveys, day-care facilities are preceded by material support, mainly via financial assistance (maternity benefits, parental

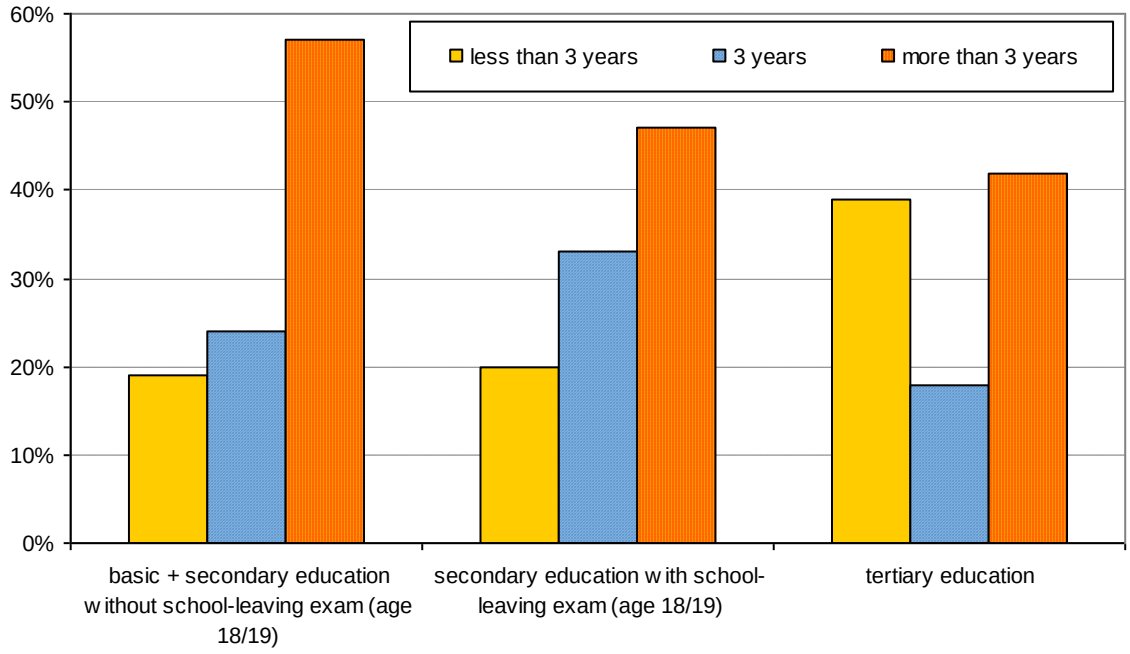
allowances, etc.), i.e. via support for the home-based care of small children. Parents of very small children ascribe most importance to the financial compensation of lost earnings during maternity and parental leave (e.g. Höhne et al. 2010a). At the same time, parents expressed reluctance against the hypothetical possibility of shortening of the period of receiving the parental allowance, even though it would be compensated by higher financial benefits. They prefer the possibility (mainly for mother) to stay at home to care for their child for at least three years and they want to benefit from parental allowance which should cover at at least part of the costs. Women (and men) thus prefer an extended maternity and parental leave and financial support from state and consciously or unconsciously accept negative impacts on women's labour force participation (increasing risk of unemployment, difficultios while returning to previous job etc.).

Empirical studies conducted in the Czech Republic have repeatedly shown that, on the one hand, Czech men and women value the autonomy of their families at the same time as they stress the responsibility that lies with them for their family life, but on the other hand, they demand from the state an assured standard of living for their families and assign the state the function of protection and assistance (especially for families in need – e.g. lone-parent families, families with many children or with health disabilities) (Höhne et al. 2010a).

These preferences held by the majority of Czech men and women is seen by some authors (e.g. Soukupová 2008) as one of the reasons why Czech policy focuses mainly on financial forms of support, while in the majority of EU states the focus is on supporting work-life balance. Even the national concept of family policy in the Czech Republic, formulated by the Ministry of Labour and Social Affairs, confirms this tendency when it states that "caring for children and the household must be placed on the same level as employment" and this "must be reflected in the financial evaluation of such care" (Národní koncepce ... 2005: 12).

The majority of mothers stay at home to care for their child for at least three years. Figure 4.5 shows that most women, regardless of their educational level, stay at home with children at least three years, which fully corresponds with the preferences regarding the type of childcare. University graduates significantly more often than women with lower education levels return to work before their child reaches the age of three. Conversely, low level educated women more frequently use the opportunity to receive the parental allowance for four years, although they risk the loss of their job with the original employer and increase the risk of unemployment since the mandatory reservation of a work place for a parent taking parental leave is until the child's third birthday.

Figure 4.5 Age of first child at the time the mother went back to work after maternity/ parental leave, by the highest level of education of the mother, 2006 (in %)



Source: Survey RZV2006 - Parents of children under the age of 6.

The accessibility of day-care facilities occupies a middle position among the preferred measures facilitating the work-life balance (Survey RZV2006). Surveys carried out in the Czech Republic involving parents of small children in recent years reveal that a greater emphasis is put on institutional day-care facilities for children between three and six years of age. Table 4.13 shows the preferences of parents of school-age children concerning forms of pre-school day-care. Institutional day-care in nurseries and kindergartens is considered best for children at the age of 3-4 by 37% of women and for older children by 66% of women. Conversely, parent demand for day-care facilities is relatively low for children under two years of age - institutional day-care for children at the age of 2-3 is preferred by only 5% of women and for children younger than two years the preferences are negligible.

Table 4.13 Preferred forms of caring for children by parents of small children, 2006

Form of caring	**Age of child**				
	6-11 months	1-2 years	2-3 years	3-4 years	4+ years
Mother	**93.1**	**87.6**	**71.2**	**36.2**	17.1
Father	3.9	3.9	5.8	3.5	0.8
Both parents alternating	1.5	6.2	9.3	5.8	3.5
Grand parents / relatives	-	1.2	5.4	10.1	6.6
Nurseries / kindergarten	0.4	0.4	5.1	**36.6**	**66.3**
Other	1.2	0.8	3.1	7.8	5.8

Note: The category "others" includes alternative forms of non-family and non-institutional care which were preferred only marginally (paid babysitting, mutual babysitting within a group of other parents).

Source: Survey RZV2006 – Parents of school-age children

5. Fertility patterns in the Czech Republic

Fertility trends during the socialist era were influenced by population-related policy measures especially the legalisation of abortion in 1957 and pro-natal policy measures implemented in the early 1970s which were associated with considerable fertility swings. However, the most pronounced changes concerning fertility have appeared since the early 1990s and are characterised primarily by a sharp decline in fertility rates and a steep rise in the mean age at childbearing.

Although both cohort and cross-sectional approaches are equally important, there are a number of limitations to the cohort method brought about by the necessity to have a relatively long duration of observation since cohort childbearing age patterns can be fully analysed only when each generation of women approaches the age limit for reproduction. In the Czech Republic the significant fertility postponement process was initiated by childless women born in the first half of the 1970s. Since these women as well as women from younger generations have still not completed their childbearing, it is not possible to analyse certain cohort indicators (e.g. completed fertility, mean age at birth).

This chapter focuses primarily on first and second order fertility. Studying first births is essential since one of the most important topics of this chapter is the process of fertility postponement which has been mirrored by an unprecedented increase in the mean age at first birth in the Czech Republic over the past 15 years. An analysis of fertility postponement is important in terms of understanding period fertility trends which have undergone sizeable fluctuations during the period analysed and is also important for explaining the extremely low levels of period fertility observed in the late 1990s and at the beginning of the 21st century. Third births are not included in the detailed analysis since this family model is somewhat specific in Czech society and has been analysed elsewhere (e.g. Pikálková 2003).

Chapter 5 deals both with the issues of period and cohort fertility and the postponement of childbearing as well as with changes in the relationship between fertility patterns and partnership formation and living arrangements since the proportion of children born out of a marital union has increased significantly since the early 1990s.

5.1 Period fertility trends

During the 1950s the decline in the total fertility rate (TFR) was relatively rapid and reflected the major socio-political changes of the 1950s, e.g. the collectivisation of agriculture, industrialisation based on heavy industry according to the Soviet example, centrally planned urbanisation etc. The most important factor contributing to the sharp decline of fertility at this time was the abortion law passed in 1957 (Koubek 1990). From 1958 onwards abortions on

medical grounds or for other social reasons were permitted which led to 49,035 induced abortions in that year alone (representing 34.6 induced abortions per 100 live births).

In the late 1960s the Czech Republic was experiencing sub-replacement fertility levels in contrast to all Western European countries. The temporary increase in the TFR in 1963-1964 seems to have been the result of a more restrictive approach to abortion[14] which commenced in 1962 (Stloukal 1998). However, the overall decline in the TFR in the 1960s was connected with the rapid increase in the female labour force which began in the 1950s (Kocourková 2002: 303). Therefore measures to encourage childbearing were introduced; particular emphasis was placed on cash benefits, leave arrangements and childcare services (for more details see chapter 4). As a reaction to the implementation of the population policies of the early 1970s, the TFR peaked in the years 1973 – 1979 with a value of above 2.2 (Figure 5.1).

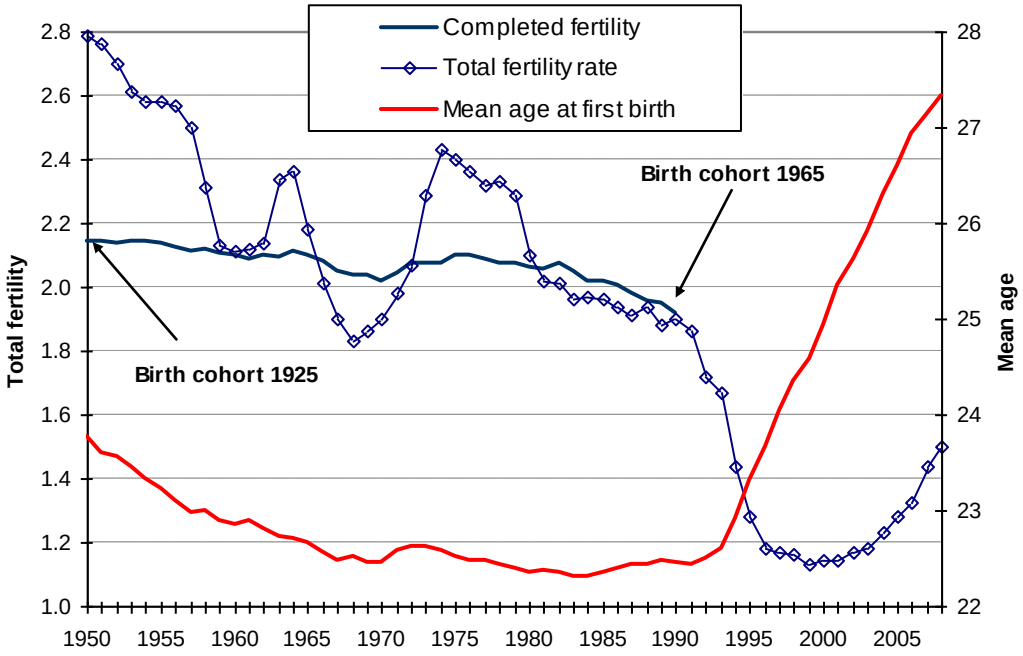
There were no marked swings in the fertility level during the 1980s; the TFR was only slightly below replacement level and was decreasing only slowly. Had no pronatal policies been adopted, this decrease could well have been faster (Philipov, Dorbritz 2003). A number of diverse reasons for this decrease have been discussed, such as the shortage of housing, high female labour-force participation and ideational changes.

The development of fertility since 1990 has been characterised primarily by a sharp decline in the number of births and by a steep rise in the mean age at childbearing. These changes can be divided into two periods. During the first period in the first half of the 1990s, the yearly decline in the fertility rate was extremely significant and the TFR dropped from 1.89 in 1990 to 1.18 in 1996. During the second period (from 1996) fertility stabilised at a very low level and the TFR remained below 1.2 children until 2004. Recent data has revealed an increase in total fertility to 1.50 in 2008.

The on-going transition to the late childbearing pattern can be illustrated by a sharp rise in the mean age of mothers at first childbirth. The Czech population in the 1980s had a relatively high fertility rate and, moreover, fertility at a young female age (20-24 years). The mean age of mothers at first birth was below 22.5 years for a whole decade and began to rise only after 1992. Whereas in 1992 the mean age of mothers at first birth was still 22.5, in 1995 it had risen to 23.3, and by 2008 it had reached 27.3 years (almost five years later than in the early 1990s). A similar rise can be seen for mean age at childbearing which increased by 4.5 years, from 24.8 to 29.3, between 1990 and 2008. Mean age at first birth had previously been declining gradually over a number of decades (Figure 5.1).

[14] The new administrative restriction on abortions in 1962 was imposed for married women experiencing their first pregnancies prior to which the abortion law of 1957 permitted abortions on medical grounds or for other social reasons provided that the request had been approved by the local abortion committee.

Figure 5.1 Total fertility rate (1950-2008) and completed fertility (1925-1965), mean age at first birth, Czech Republic



Sources: Rychtaříková 2004, CZSO - http://www.czso.cz/csu/redakce.nsf/i/obyvatelstvo_hu

The postponement of childbearing was particularly noticeable after 1992. Since the conventional indicator of the fertility level reflects the interplay of the timing (tempo) and level (quantum) components of fertility, the TFR (total fertility rate) was markedly affected by such a shift. Attempts to define a measure of the level of fertility that would not be affected by tempo distortions observed in periods of massive fertility postponement (or rejuvenation) have resulted in a vast amount of demographic literature on the tempo adjustment of period fertility indicators (e.g. Bongaarts, Feeney 1998, Philipov, Kohler 2001, Sobotka, Lutz, Philipov 2005, Sobotka 2003, 2004).

Figure 5.2 displays the conventional 'observed' TFR and two alternative indicators of total period fertility. The first measure is tempo adjusted TFR (adjTFR[15]) computed on the basis of the Bongaarts and Feeney formula. This approach aims to control for the effects of the postponement of childbearing to a later age by controlling for an increase in the mean age at childbirth. The second indicator, resulting from period fertility tables, is the summary indices of period fertility controlling for the age and parity composition of women (PATFR[16]).

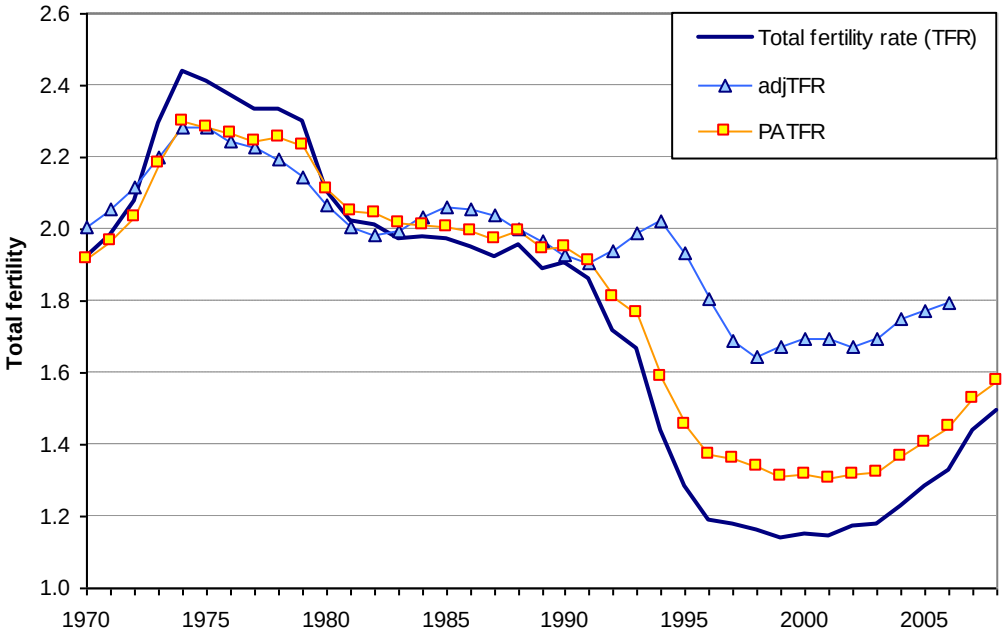
Figure 5.2 reveals that until 1992 the timing of childbearing was stable and the tempo adjusted indicators of fertility level are very close to the TFR since tempo effects were absent at that time. The only exception is a period in the mid-1970s when several pro-natal policy measures were implemented following which the TFR increased considerably (the TFR of birth order 1 even exceeded the level of 1.0 in the period 1974-1976). Both the adjTFR and the

[15] For more details see Appendix 2.

[16] PATFR is the main output of the period fertility table (for more details see Appendix 2).

indicator based on probabilities (PATFR) reveal that the increase in the TFR was partly caused by the advancement of childbearing in these years (i.e. by timing changes regarding entering into motherhood and enlarging the family).

Figure 5.2 Fertility trends 1970-2008, total fertility rate, adjTFR, PATFR, Czech Republic



Source: Human Fertility Database, own calculation (adjTFR)

Once the method proposed by Bongaarts and Feeney (1998) is applied, the adjusted TFR (adjTFR) reached considerably higher levels during the period in which the TFR dropped substantially and ranged between 1.6 and 1.8 for the whole period of the lowest TFR levels. The pronounced postponement of childbearing which commenced in the second half of the 1990s also caused a divergence between the TFR and PATFR indicators (Figure 5.2). The fertility table indicator for first birth order (PATFR1) reached levels of 0.77-0.79[17] during the second half of the 1990s when the period fertility indicator for first birth order (TFR1) declined to an extreme level of 0.52-0.53. Such a difference is important particularly with regard to the estimated level of childlessness among younger cohorts of Czech women since PATFR1 levels do not imply such an enormous increase in cohort childlessness in the future as might be concluded from the TRF1.

Even though the adjTFR and PATFR provide different results for the period of massive fertility postponement, both indicators remain above the lowest-low threshold of 1.3. This suggests that the lowest-low fertility level observed in the Czech Republic in the second half of the 1990s and at the beginning of the 21st century can be considered a temporary effect of delayed motherhood. As was shown in an analysis of fertility postponement in European countries (Sobotka 2004), 'lowest-low fertility' is typically associated with a marked postponement of childbearing and it appears to be a temporary phenomenon which does not

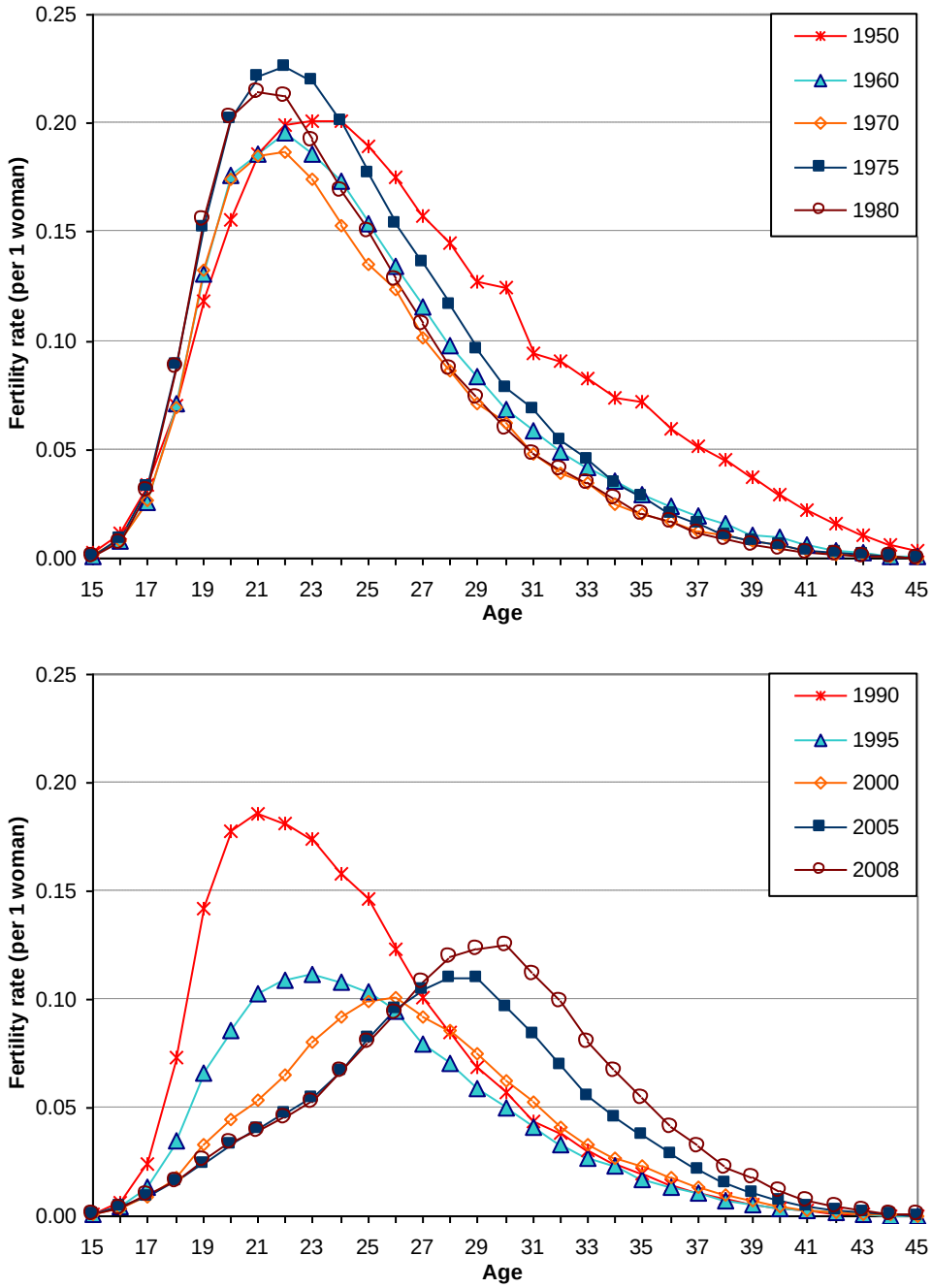
[17] Source: Human Fertility Database; PATFR1 is not displayed in Figure 5.2.

lead to similarly low cohort fertility (even though it may persist for a relatively long period of time).

The slight increase in the TFR observed since 2005 in the Czech Republic could be attributed in part to the weakening tempo effect and decelerating fertility postponement. The recent increase in the number of births was influenced mainly by the fact that women born in the numerous birth cohorts of the 1970s both ended the postponement of entry into motherhood and were already enlarging their families in many cases. In 2007, exactly fifty per cent of children were born to women themselves born in the period 1974–1979 and almost one-third of children were born to younger women born in 1980 or later (Štyglerová 2008).

The postponement of childbearing and the changing childbearing pattern during the 1990s is reflected in modified age specific fertility rate curves (Figure 5.3). Changes in reproductive behaviour led to a fall in fertility rates at younger reproductive ages and to a shift in fertility to an older age. Until the beginning of the 1990s, maximum fertility rate values were displayed by younger women (age interval 20-24). In the first half of the 1990s the yearly decline in fertility rates was extremely significant with regard to this age group however the maximum value remained within this age group and shifted only slightly towards a higher age (23 in 1995). During the second half of the 1990s and at the beginning of the 21st century fertility rates stabilised at a low level and maximum intensity shifted towards a higher age. During this period a sharp rise in the mean age of mothers at childbearing was observed (table 5.1) both in first and second order births and in total.

Figure 5.3 Age-specific fertility rates 1950-2008, selected years, Czech women aged 15-45



Source: Human Fertility Database

After 2000 a recuperation of fertility can be observed among older women, in particular around the age of 30. While fertility rates up to the age of 26 showed a gradual decline, fertility rates of women above the age of 26 were on the increase. In 2008 age specific fertility rates reached their maximum at age 30.

Table 5.1 Mean age at birth and mean ages by birth order, 1950-2008, selected years

Mean age at	Year									Change	
	1950	1960	1970	1980	1990	1995	2000	2005	2008	1995-1990	2008-1995
Birth	27.3	25.5	25.0	24.7	24.8	25.8	27.2	28.6	29.3	+1.0	+3.6
1st birth	23.7	22.9	22.5	22.4	22.5	23.3	25.0	26.6	27.3	+0.9	+4.0
2nd birth	26.9	26.1	26.0	25.4	25.6	26.4	28.1	29.6	30.5	+0.8	+4.0

Source: Human Fertility Database

The postponement of first births among Czech women has been proceeding faster than in many Western European countries which experienced fertility postponement earlier than the Czech Republic. In 1990 the age at childbearing was still very young in the Czech Republic (less than 25 at birth, 22.5 at first birth; table 2.1). Even though between 1990 and 1995 there was only a 1 year increase in the mean age of giving birth, between 1995 and 2008 the mean age had increased by 3.6 years (and by 4 years in terms of first and second order births). However, due to the initially very young age at childbearing, space still existed for further postponement which took place albeit at a slower pace. Recent preliminary data indicates that the increase in mean age at childbearing continues with a mean age of 27.6 at first birth and 29.6 at childbirth in 2010 (CZSO).

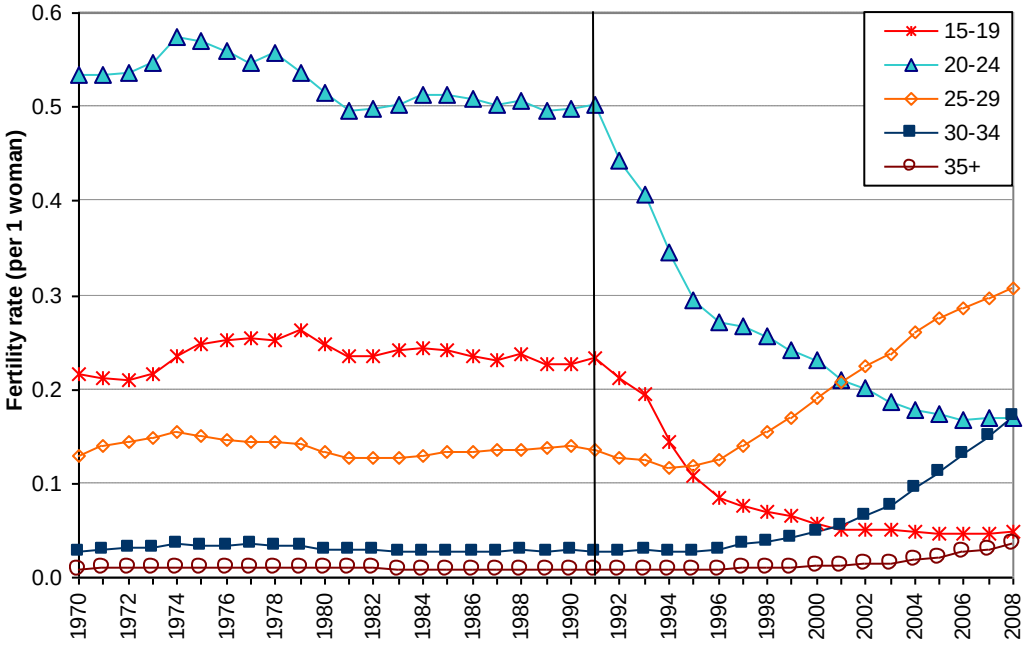
First-order fertility in the youngest age group (15-19) began to decrease significantly after 1991 and, when compared to the situation in 1990, the level fell three times up to 1997 (Figure 5.4a). A pronounced fall in first-order fertility was also observed in the age group 20-24 in which first-order fertility was concentrated during previous decades. As compared to the situation in 1990 the fertility rate fell to one-half of its value until 1997 and continued to decrease until recently. Today the level of first-order fertility among women aged 20-24 is below the first-order fertility level of women aged 15-19 before 1990. After the mid-1990s, a recovery can be observed among older women, in particular in the age group 25 to 30, whose fertility rate increased 2.5 times between 1996 and 2008. The recovery also began to be obvious among women aged 30-34 a few years later and experienced an even steeper increase – the fertility rate at age 30-34 increased 5.6 times between 1996 and 2008.

Second-order fertility followed the same trend in the first half of the 1990s even though the rapid decline in fertility rates began two years later than that of first-order fertility (Figure 5.4b). The reason for such a shift is clear since the postponement of childbearing could be seen as a process consisting of several stages. Those women who decided at a young age to postpone first births also contributed significantly to the postponement of second and higher births several years later. The most pronounced decline was observed in the age group 20-24 - when compared to 1993 the level fell to one-third of its value up to 2000. A decline was also observed among women aged 25-29, albeit at a slower pace. However, it should be noted that the gradual decline in second-order fertility in these age groups had commenced as early as at the beginning of the 1980s (at that time the effect of the pro-natal policy measures of the mid-1970s ceased to influence a short-term increase of second-order fertility).

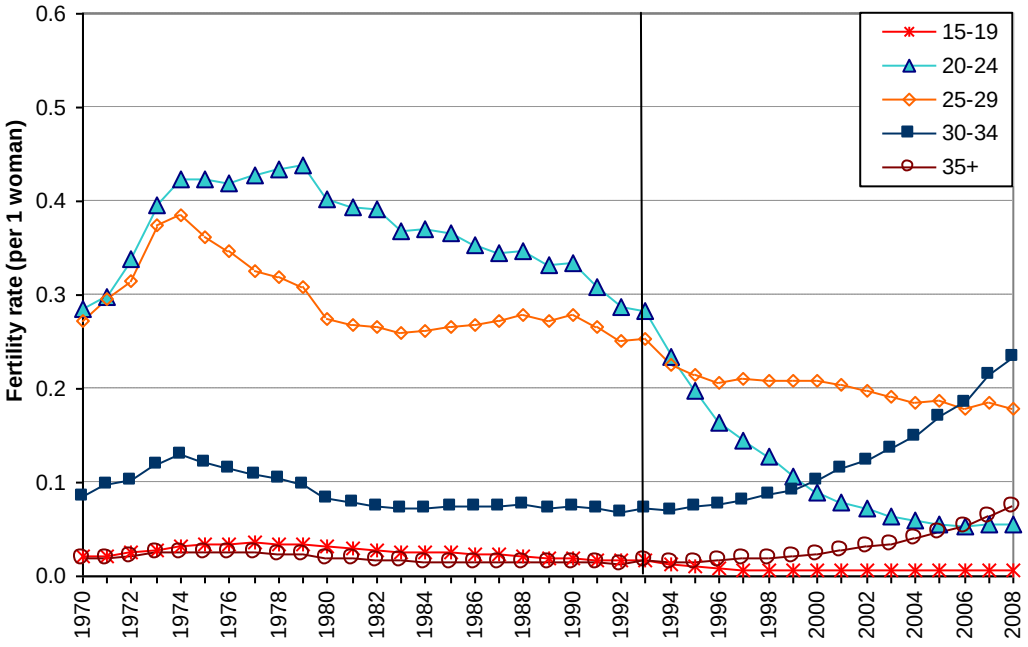
A recovery with respect to second-order fertility commenced among women aged 30-34 around the year 2000. In recent years a recovery has been noticeable among women over 35 years who increased second-order fertility rates threefold between 2000 and 2008 (Figure 5.4b). However, the recovery in second order fertility has not yet achieved the level of first-birth recuperation since between 2000 and 2008 fertility rates increased 2.3 times at the age 30-34 and 3.2 times for women over 35.

Figure 5.4 Birth-order specific fertility rates by age group (15-19, 20-24, 25-29, 30-34 and 35+), 1970-2008

a) first birth



b) second birth



Source: Human Fertility Database

5.2 Period fertility tables and intensities of 1st and 2nd births

Methodology involving fertility tables controlling for the age and parity composition of women provides a useful tool for analysing fertility behaviour taking into account changes in the composition of the female population according to parity. The broader use of period fertility tables has been limited to date, in part due to certain constraints regarding data availability. Today, period fertility tables for selected countries are available in the Human Fertility Database[18].

In fertility tables, intensities (conditional fertility rates or occurrence-exposure rates or rates of the first kind) are used to analyse fertility development. Conditional age-specific fertility rates are obtained by dividing the number of i^{th} births to women at age x in a year t by person-years lived by women aged x of parity $i-1$, and thus exposed to the risk of having an i^{th} birth in year t (Method Protocol... 2010).

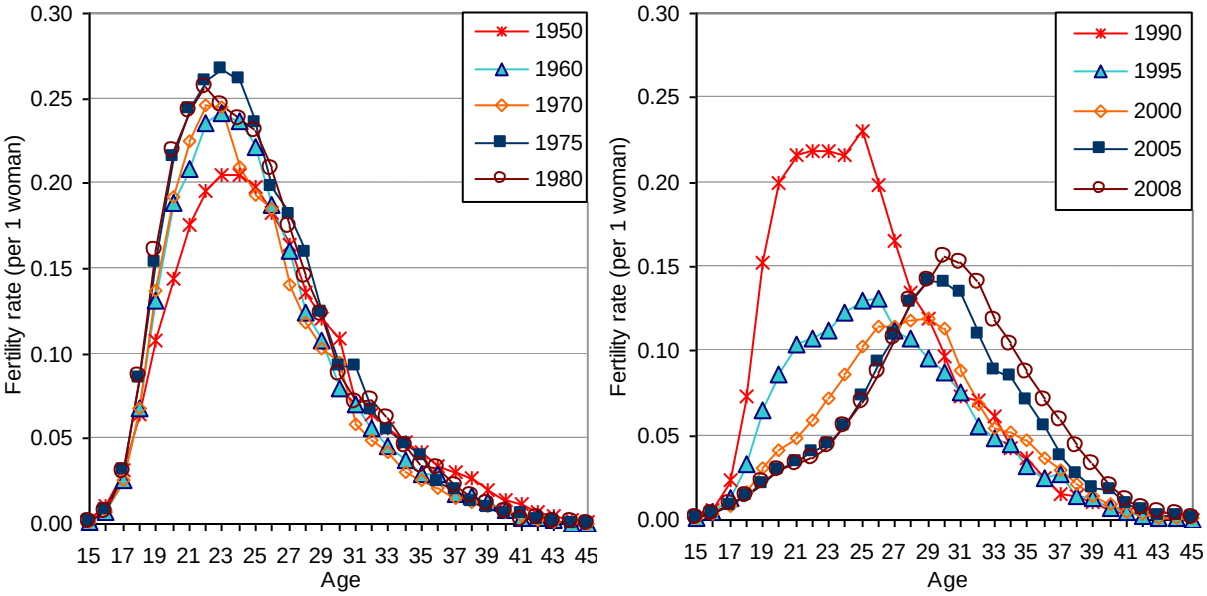
Figure 5.5 reveals that for the 1960s, 1970s and 1980s the intensity of entry into motherhood among childless women was high and reached a maximum between 21 and 24 years of age. After 1990 intensity at younger ages declined steeply and the maximum was shifted to higher ages due to the massive postponement of first childbearing. After 2000 the intensity of first births among childless women started to increase with regard to older age groups but remained well below the levels of maximum intensity observed in 1990.

Intensities of second births among women with one child reveal greater differences even in the period before 1990 (Figure 5.6). Second birth intensities declined during the 1960s but the maximum intensity remained within the 22-26 age group. During the 1970s, following the introduction of population policy measures targeted predominantly at higher order births (see chapter 4) second birth intensity increased and remained concentrated at a relatively young age (with the maximum among women aged 22-25).

The first stage of the changes in the 1990s consisted of a decline in second birth intensities. A shifting intensity towards higher age was observed later compared to first births; however in 2005 the maximum had already shifted by four years compared to 1995 following which the intensity of second births among women with one child reached maximum values around the age of 30.

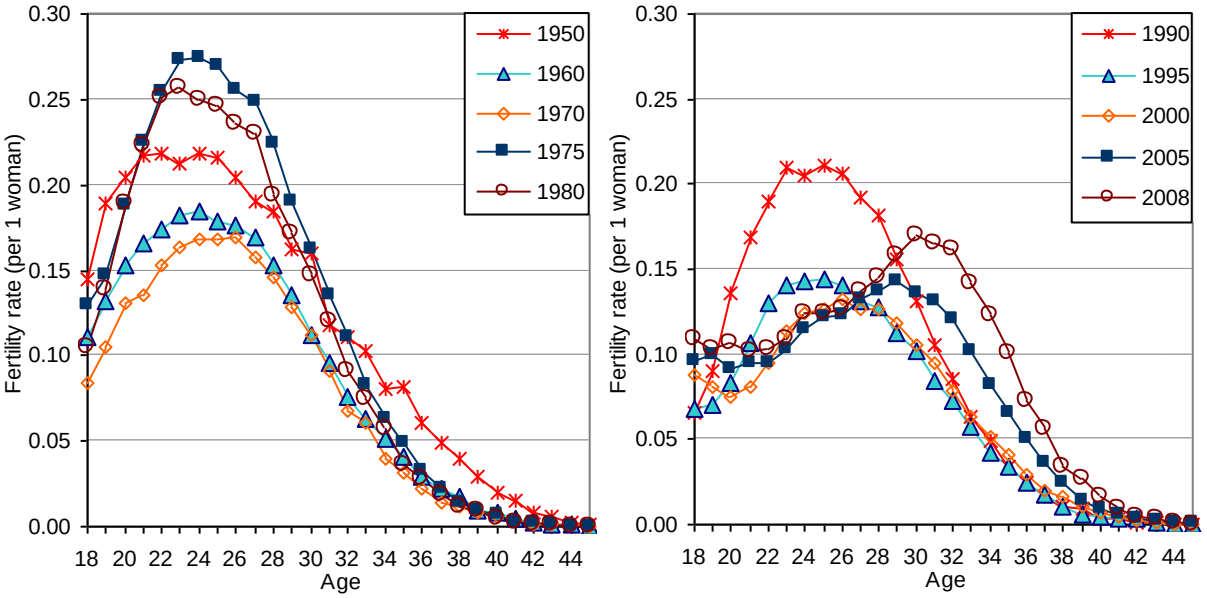
[18] HFD - www.humanfertility.org. For a detailed description of fertility tables see Methods Protocol for the Human Fertility Database. A brief description based on this protocol can be found in Appendix 2.

Figure 5.5 Conditional fertility rates by age – first birth order (1st birth for parity 0), 1950-2008



Source: Human Fertility Database

Figure 5.6 Conditional fertility rates by age – second birth order (2nd births for parity 1), 1950-2008

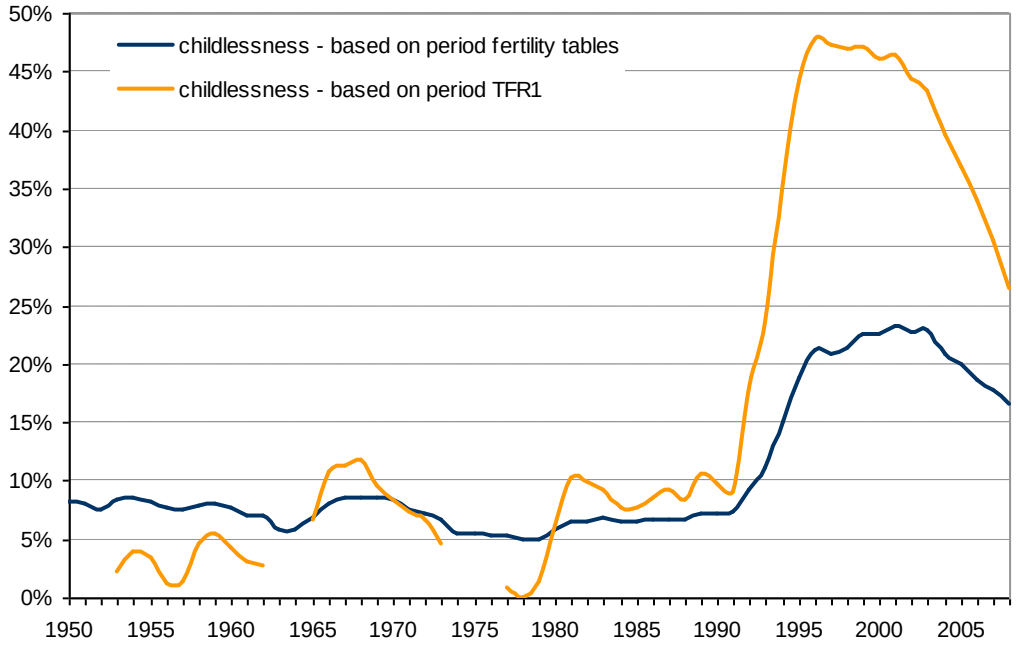


Source: Human Fertility Database

An indicator measuring proportions of childless women can be obtained from fertility tables; the table proportion of childless women stabilised at a low level until the early 1990s (Figure 5.7). In the 1990s the proportion of childless women at the age of 50 taken from fertility tables was on the increase and in 1996 exceeded 20 per cent for the first time and ranged from 22 to 23 per cent until 2003 after which it started to decline. According to the fertility conditions of 2008, 16.5 per cent of women will hypothetically remain childless.

Figure 5.7 reveals important differences in the hypothetical level of childlessness when comparing the summary indicator of the total fertility rate of first birth computed from fertility tables and the TFR1 (from unconditional age specific rates or rates of the second kind). Compared to childlessness based on the TFR1, the indicator controlled for the parity distribution of the female population exhibits a more stabilised level of childlessness until the 1990s (i.e. is not influenced by the rejuvenation of fertility in the 1970s) and it does not imply particularly high levels of childlessness after 1990. Conversely, if hypothetical childlessness is based on the total fertility rate of first births for the late 1990s it surpasses 45 per cent. However, taking into account the whole process of the changing childbearing patterns of Czech women, such a high level of childlessness is not supported by any other analysis.

Figure 5.7 Hypothetical level of childlessness based on the period fertility tables indicator and the total fertility rate of first births, 1950-2008



Note: In certain years, data on childlessness based on the period TFR1 is lacking since the TFR1 indicator exceeded a value of one (due to the rejuvenation of childbearing); therefore it is not possible to calculate hypothetical childlessness.

Source: Human Fertility Database

5.3 Cohort fertility

In the Czech Republic profound changes in the timing of childbearing have been observed over the last 20 years. In addition to the introduction of alternative period fertility indicators that are potentially less affected by tempo distortion (such as the tempo adjusted TFR and fertility table indicators) the cohort approach catches the essential element of fertility analysis. Such analysis might introduce a further insight into changing reproductive behaviour in the Czech Republic since the profound changes in period fertility indicators analysed in chapters 5.1 and 5.2 are reflected in cohort fertility quantum indicators and in the timing of important family transitions.

In the Czech Republic, women traditionally had their first child early and cohort fertility age patterns were relatively stable with regard to the birth cohorts of the 1940s, 1950s and 1960s, i.e. more than 80 per cent of women from these generations had their first child before the age of 26. Women from older generations are characterised by almost the same timing of motherhood and cohort age-specific fertility rates show a nearly uniform distribution of first birth intensity. Compared to women born in the 1950s, the birth cohorts of the 1960s moved the birth of the first child to an even younger age since at the age of 18-22 these generations reveal a higher intensity of first-order births than their older counterparts (Figure 5.9).

Women born in the years 1925-1959 achieved completed fertility at around 2.1 children and the level remained remarkably stable for these generations (Figure 5.1). The generations of the mid-1940s show the lowest completed fertility rate, however the average number of children per woman did not fall below 2. A subsequent slightly downward trend in fertility among younger generations was partly reversed by the pro-natal policy measures introduced at the turn of the 1960s and 1970s. These measures positively influenced the fertility of women born at the beginning of the 1940s and 1950s (Rychtaříková 2004).

A gradual decline in completed fertility can be observed among women born after 1960 and this decline accelerated somewhat with respect to the generations entering parenthood after 1990 (Sobotka et al. 2008). Figure 5.1 reveals that the mean number of children per woman in generations born at the beginning of the 1960s dropped below two.

The variability of completed fertility with respect to education remained at a minimum level, for example, completed fertility for the cohort born in 1955 was 2.28 among women with a basic education and 1.74 among university-educated women; for cohort 1960 it was 2.26 and 1.73 respectively (Rychtaříková 2004). However differences in distribution according to number of children were apparent - women with a basic education remained childless more often than women with a secondary education, but they also frequently formed large families. In the cohorts born around 1960, close to 40 per cent of women with a basic education had three or more children compared with 11-12 per cent among women with a university education (Sobotka et al. 2008).

A continuous postponement of childbearing commenced with cohorts born in the late 1960s; a large decline in first childbearing was observed among women in the 1970s. Those women were in their early 20s or even still in adolescence when the transition to the market economy began and a shift in their fertility behaviour is evident. Women born in the late 1960s and 1970s gradually reduced their young age fertility and the fertility rates of first birth order declined particularly in the age group 18-25. For women born in the second half of the 1970s this process was even faster and age specific fertility rates in given age groups dropped significantly.

Compared to the 1950 birth cohort, the fertility of the 1970 birth cohort was notably lower at ages 23 to 25 and many first children were born after the age of 27. Among younger cohorts, the intensity of first birth was considerably higher after age 25 and at age 28 the age specific fertility rate of the 1975 cohort was almost two times higher than that of the 1970 cohort (Frejka, Sardon 2006).

Figure 5.8a reveals these trends. Cumulated cohort fertility rates by age represent the proportion of women in each generation who were already mothers at a given age. While at the age of 25, 81 per cent of women born in 1950 had at least one child, among women born in 1970 the figure was 71 per cent and this proportion dropped to less than 50 per cent of women born in the mid-1970s. These results illustrate a sharp decline in the fertility rate of young females, while the generations of the mid-1970s specifically greatly affected the age pattern concerning entering into motherhood and contributed to shifts in the period fertility age structure.

The process of postponement and subsequent recovery of childbearing among the generations of the mid-1970s and its continuation among younger generations can be illustrated by comparing women from younger generations with an older, base generation. Figure 5.9 displays the cumulative change in the first birth progression rate by age for different generations of women compared with the 1950 birth cohort characterised by a "typical" early childbearing pattern. During the process of postponement, age-specific fertility rates are lower in younger birth cohorts, i.e. adolescents and women in their mid-twenties. Therefore, taking into account the cumulative difference, the variance compared with the base cohort increases in each subsequent younger birth cohort up to the age of 25. When these women reach their late twenties, age specific fertility rates are higher than in previous cohorts since the fertility recovery process is initiated. Therefore there were a number of first births to women belonging to younger generations as they got older. For example, age-specific fertility rates for women aged 28 were almost 100 per cent higher in the 1975 generation than that of 1970. Figure 5.9 indicates that the more pronounced was the decline in the intensity of childbearing at a younger age, the more intense is the recuperation of births after age 26.

In the context of the strong and relatively long-term decline in cross-sectional fertility indicators in the Czech Republic in the 1990s, discussion began on the issue of long-life childlessness and the potential for increasing childlessness among younger generations of women. Generations born after 1930 in the Czech Republic were traditionally characterised by extremely low levels of childlessness which indeed remained at very low levels up to those generations born at the beginning of the 1960s (childlessness of around 5-7%). According to a number of studies[19] and other data, the level of childlessness would not increase significantly among younger generations of Czech women because recuperation of fertility after the age of 26 is significant (Figure 5.9). Whereas with regard to the 1974 generation there were a third more childless women at age 25 than in the 1950 generation, the difference at age 33 was only 10 per cent (with respect to the age of the younger generation compared here, this difference may not be final). Women a few years older have reduced this difference even more since more than 90 per cent of women born at the end of the 1960s and the beginning of the 1970s have at least one child even though their fertility level is still below that of the 1950 generation.

[19] According to the low variant of the projection of childlessness, 13% to 14% of women born in 1975-1978 will remain childless (Sobotka 2006).

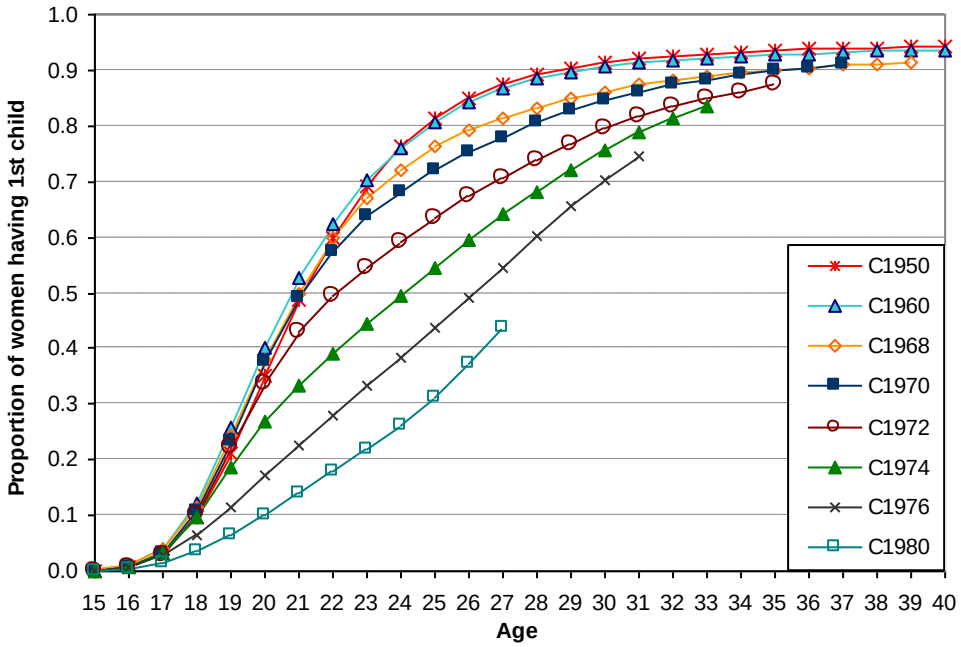
A decline in second birth intensities occurred among the generations born in the late 1960s (Figure 5.8b). This shift indicates that a change in reproductive patterns and postponement of childbearing to a later age occurred even among these women[20] who in many cases already had one child at the time social changes and shifts in reproductive patterns commenced. Therefore the decline in second births was a direct response to developments in the first half of the 1990s.

The recuperation of second births began around the age of 30; however the process was not as intensive as in the case of first births and thus created a substantial difference in the level of second childbearing between the baseline cohort of 1950 and younger generations who experienced social transformation in the middle of their reproduction. In the baseline birth cohort of 1950 almost 81 per cent of women had at least two children at the age of 40 and the proportion decreased by only 2 percentage points in the 1960 generation. However women born in the late 1960s and the beginning of the 1970s will probably remain below this level since they have currently reached a level of a mere 70 per cent in their late thirties and further recuperation is unlikely to change this percentage significantly (Figure 5.8b).

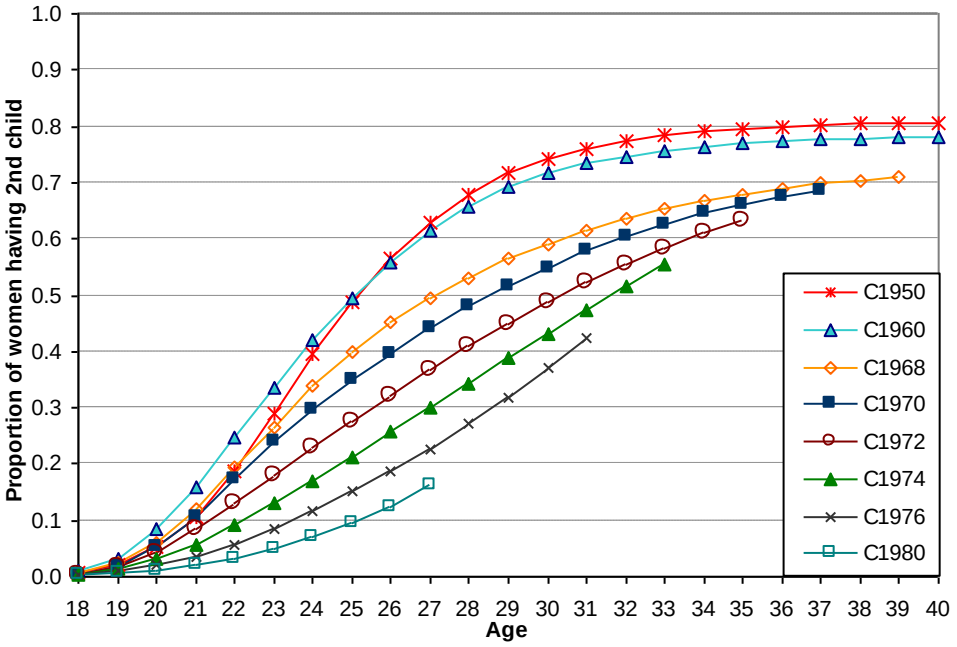
[20] Women of these generations entered into motherhood at an early age more often since they began their reproductive careers under the reproductive conditions prevalent in the late 1980s.

Figure 5.8 Progression to first and second birth by age – cumulated cohort fertility rate, women born between 1950 and 1980, selected birth cohorts

a) Progression to first birth

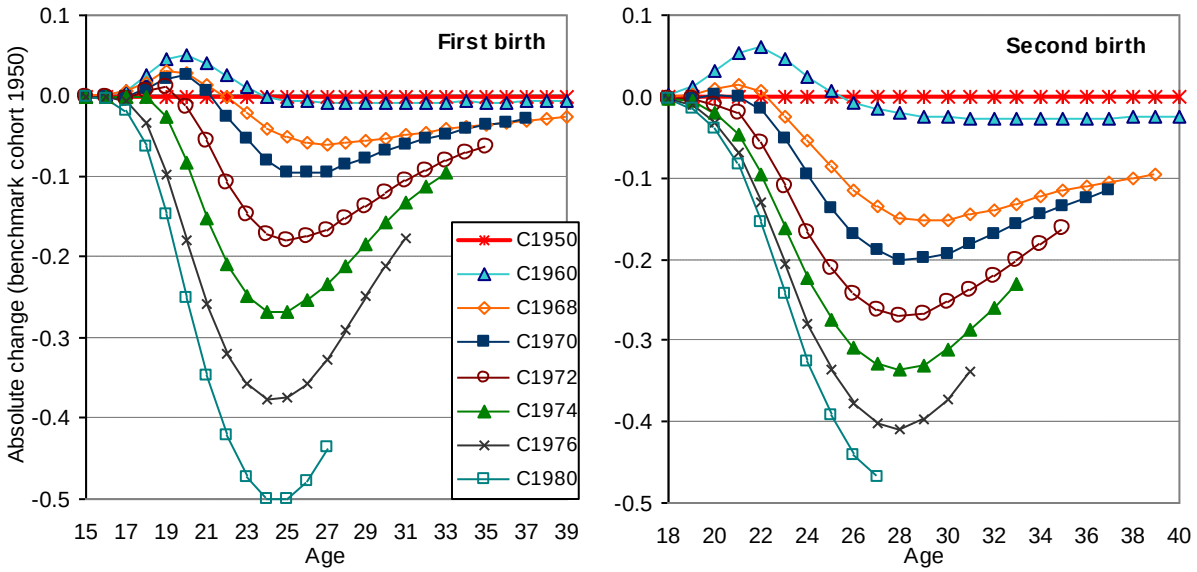


b) Progression to second birth



Source: Human Fertility Database

Figure 5.9 Cumulative change in first and second birth progression rate by age among women born between 1950 and 1980, selected birth cohorts, benchmark cohort = 1950



The postponement of childbearing among Czech women began in the generations of the late 1960s. The young age at childbearing pattern was characteristic for older generations and mean age at birth data reveals that childbearing was shifted towards an even younger age with respect to women of the generations of the 1950s (table 5.2).

Table 5.2 Cohort mean age at birth and cohort mean age by age 40, by birth order, 1935-1968, selected birth cohorts

Mean age at	Birth cohort								Change	
	1935	1940	1945	1950	1955	1960	1965	1968	1955-1935	1968-1960
Birth	25.2	25.0	25.1	24.9	24.5				-0.7	
1st birth	22.7	22.5	22.6	22.6	22.4				-0.4	
2nd birth	25.9	25.9	26.2	25.6	25.2				-0.7	
Mean age by age 40 at										
Birth	25.1	24.9	25.1	24.8	24.4	24.4	24.7	25.1	-0.6	+0.6
1st birth	22.7	22.5	22.5	22.6	22.3	22.3	22.5	22.7	-0.4	+0.4
2nd birth	25.9	25.9	26.2	25.6	25.2	25.2	25.8	26.3	-0.7	+1.0

Source: Human Fertility Database

5.4 The transformation of childbearing patterns from the cohort perspective

Whereas women born up to the mid-1960s had experienced most of their childbearing before 1990 and, as regards their fertility histories, the pattern of early childbearing is typical, women born in the late 1960s and the 1970s experienced a substantial postponement of motherhood as well as more differentiated family and fertility patterns. Therefore the detailed empirical

investigation of the postponement and recuperation process in this chapter focuses on women born after 1965.

The shift in timing resulted in a bimodal distribution of first birth rates by age observed for women born in the mid-1970s (Figure 5.10). Many women from these generations had become mothers at a young age following the reproductive model of early childbearing. However, there were still many childless women from these generations after 1989; these women had delayed childbearing until a later age and therefore interrupted the initial course of their generations' fertility patterns (see also Sobotka et al. 2008: 416-418).

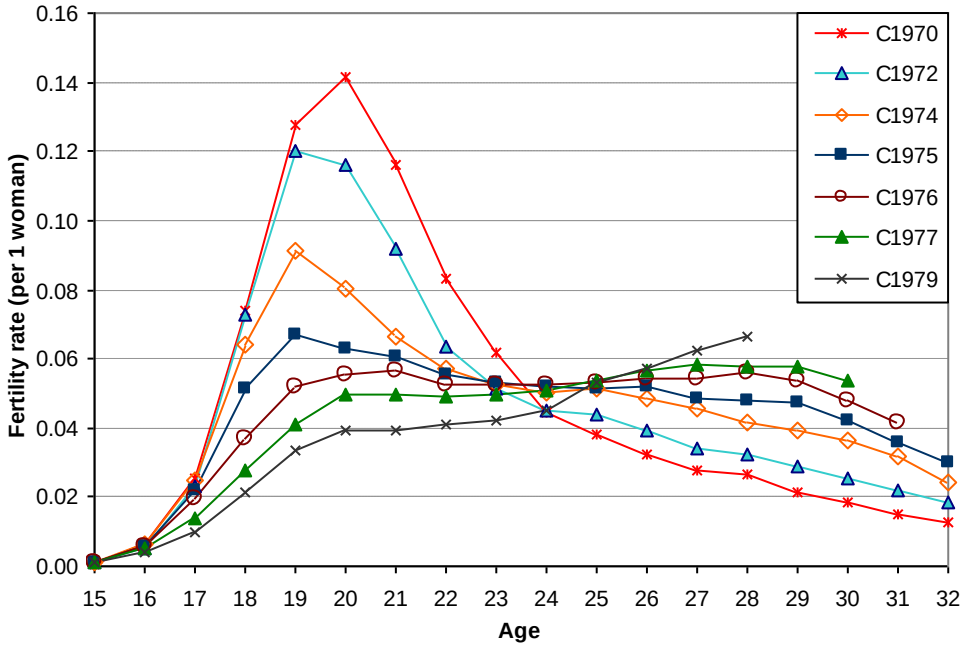
Fertility postponement proceeded at a rapid pace from one generation to the next. Women of generations born in the late 1960s exhibited low fertility when they were in their thirties since their childbearing age patterns still followed the young childbearing model with a concentration at around age 20-24. However with respect to these generations a gradual decline in fertility had already begun, even though they were postponing births only gradually.

The shift in childbearing to a higher age began with the late 1960s and early 1970s birth cohorts and fertility rates increased gradually after the age of 24 (in the case of the first birth) and 28 (in the case of the second birth) in successive generations. Postponement accelerated with respect to the mid-1970s generations. Compared to the 1960 generation, fertility rates at the former peak of fertility (around the age of 21 for first births and 24 for the second birth) dropped more than two times whereas the fertility rates of women in their late twenties more than doubled.

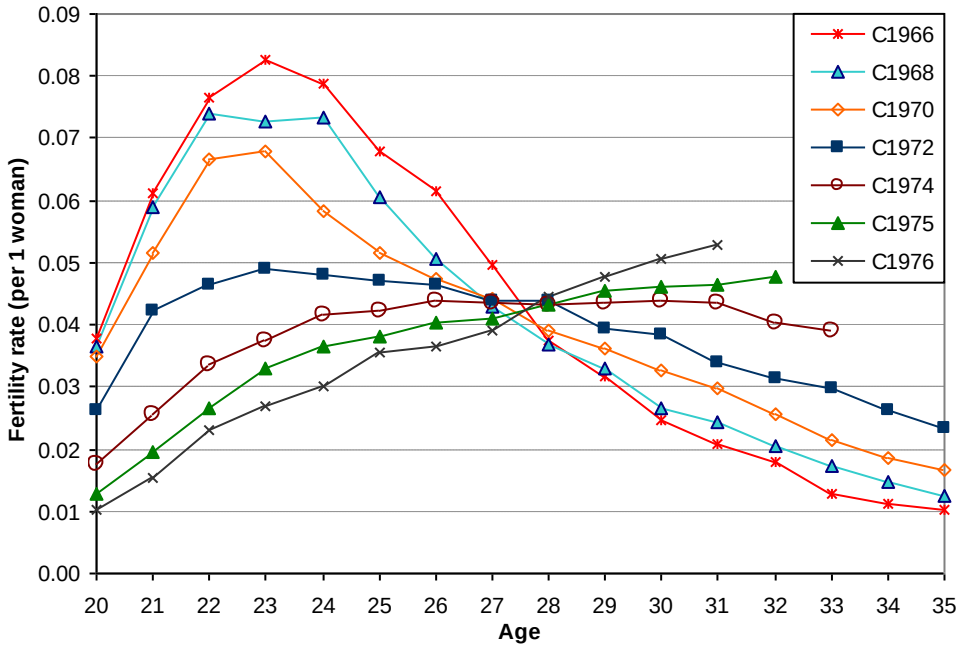
Taking into account the cohort development of the fertility postponement process it is possible to conclude that the overlapping low fertility of older women from the generations of the early 1960s and the rapidly decreasing fertility at a young age of women born in the mid- and late 1970s led to a steep decline in the TFR during the second half of the 1990s.

Figure 5.10 Age and order-specific fertility rates, women born between 1966 and 1979, selected birth cohorts

a) First births



b) Second births

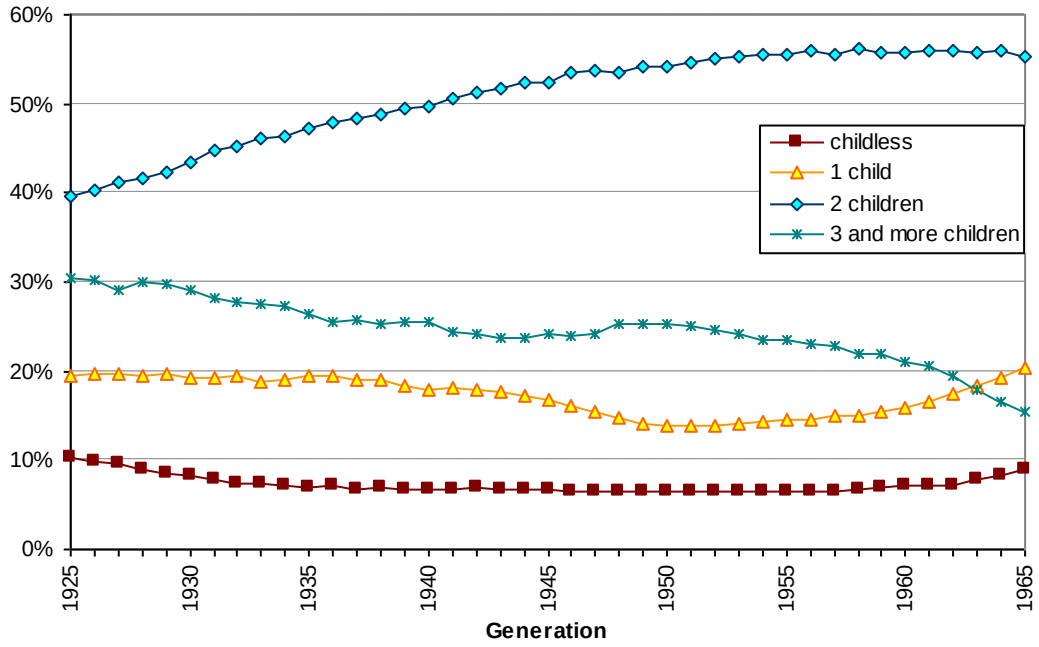


Source: Human Fertility Database

5.5 Birth order specific fertility patterns and second births

The socialist era was characterised by the universality of the two-child family model and relatively low socio-economic differentiation in terms of completed family size (Rychtaříková 2004). Around 72 to 75 per cent of women born in the 1930s had a second child increasing to around 80 per cent for the generations of the late 1940s and 1950s (Human Fertility Database). A decline in second order births commenced with the cohorts of the late 1960s and apparently only around 70 per cent of women will have a second child from the cohorts of the late 1960s (see Figure 5.8b). A further feature related to the second child is an evident cohort change in parity distribution (Figure 5.11); the proportion of two child families increased from around 40 per cent for the cohorts of the late 1920s to around 55 per cent for the cohorts of the 1950s and early 1960s (Rychtaříková 2004).

Figure 5.11 Parity distributions among Czech women born 1925-1965



Source: Rychtaříková 2004 (based on Census 2001)

The orientation of the Czech population towards the two-child family model was linked to a gradual decline in childlessness and in the proportion of women with three or more children. Childlessness reached very low levels, below 7 per cent, among women born from the early 1930s which is only slightly above the level of biological infertility (Sobotka et al. 2008). The proportion of women with more than two children has been on the decrease since the generations of the 1920s. Whilst 28 per cent of women born in 1930 had three or more children, only 21 per cent of the 1960 generation did so.

The two child family model among the birth cohorts of the late 1940s and 1950s was further strengthened by a decline in the proportion of women with only one child which dropped below 15 per cent for women born in the period 1948-1956. However, the proportion of women with only one child began to increase among women born in the 1960s. Even though these women

had not yet finished their reproduction careers by 2001, they were already in their late 30s at that time and thus would be unlikely to proceed to a larger family to such an extent that it would significantly influence the final proportion of one-child mothers.

These trends are mirrored in the parity progression ratios for the analysed cohorts. Women born in the 1950s achieved a progression ratio to a second child of more than 0.85 which is higher than the progression rate of the generations of the 1930s and 1940s, whereas their progression ratio to a third child decreased to around 0.3 and the progression ratio to a fourth child to 0.23 (Table 5.3).

Table 5.3 Parity progression ratios, selected generations of women born between 1935 and 1958

	1935	1940	1945	1950	1955	1958
PPR 0_1	0.92	0.94	0.92	0.94	0.94	0.93
PPR 1_2	0.80	0.81	0.82	0.86	0.85	0.85
PPR 2_3	0.39	0.36	0.33	0.34	0.31	0.30
PPR 3_4	0.32	0.29	0.25	0.23	0.23	0.23

Source: Human Fertility Database

The demographic changes of the 1990s were not connected only with the delaying of entry into marriage and first childbearing but are also characterised by a prolongation of the interval between first and second birth (from 3.7 years in 1990 to 5.1 years in 2005; Zeman 2006) and the delaying of childbirth within marriage. The first parity marital fertility intensity decrease is not significant (8 per cent from 1990 to 2000) but the change in the timing of childbearing is significant since fertility decreased severely in the first year of marriage; conversely, it rose after a two-year period following the wedding (Kantorová 2002).

Due to the postponement of a second childbirth within marriage, the decrease in the second parity marital fertility rate during the 1990-1997 period was more significant (from 531 second children per 1 000 marriages in 1990 to 386 in 1997, i.e. 27 per cent). From 1998 the second parity total marital fertility rate began to increase (in 2000 the second parity total marital fertility rate reached 426 children per 1 000 marriages and by 2005 this value had increased to 486 children). The average interval between the wedding and second childbirth grew from 4.3 years to 5.5 years throughout the 1990s and this increase continued to 5.9 years in 2005 (Kantorová 2002; own calculation based on vital statistics data).

A further indicator of postponing second childbirth within marriage is the increasing difference in the average time span between first and second childbirth from 3.1 years in 1990 to 3.9 years in 2000 which remained the same up to 2005 (Kantorová 2002; own calculation based on vital statistics data).

However, indicators of the timing of childbearing within marriage are influenced by both increasing extra-marital fertility and a declining proportion of pre-marital conceptions; therefore comparisons over the last twenty years are somewhat limited due to important structural changes concerning childbearing and partnership formation.

The **parity-cohort method** was applied in order to investigate changes in the spacing and quantum of second births among women who had their first child before the political changes and during the transformation period in the Czech Republic. Both short-term changes in the timing of second births as well as long-term trends in parity progression ratios are analysed. For this purpose, the author used a parity cohort design and organised data supplied by the Czech Statistical Office in a monthly format. For this analysis, data on all live-born children of birth orders 1 and 2 born between January 1986 and December 2009 to women resident in the Czech Republic was used. The author worked with information on the date of birth (month and year) and biological birth order of each child; in addition, the date of the first birth served for a computation of second birth order fertility rates by duration since the first birth. The data, sorted on a monthly basis, allows the more precise analysis of possible shifts in fertility timing and quantum during the whole of the period 1986-2009.

Monthly first-parity cohorts represent cohorts of women defined by the month and year of giving birth to a first child. The unconditional fertility rate $f_2(d,c)$ for monthly parity cohorts m is given as:

$$f_2(d,c) = B_2(d,c) / B_1(m=c),$$

where B_2 indicates live births of order 2, d is the time duration since previous birth (birth interval), c denotes monthly parity cohorts and m calendar month (i.e. $B_1(m=c)$ denotes the total number of live births of order *1* in month m which equals the total number of women giving birth to their 1st child in month m) (for more details see Šťastná, Sobotka 2009). In this approach, births of order 2 at duration d are related to the initial number of women giving birth to their 1st child in month t-d. Moreover, cumulative progression rates to the second birth at selected durations are computed for the first-parity cohorts of January 1986 to December 2007.

Figure 5.12 shows second-birth rates specified by duration since the previous birth for women who had their first birth in 1986-2007. Rates are counted for monthly parity cohorts and in monthly intervals, however due to fluctuations only yearly parity cohorts[21] are shown in order to illustrate the main trends. However, compared to rates based on yearly information, the monthly format of the analysis allows changes in timing of the second birth to be depicted more precisely (for more details see Sobotka et al. 2005).

The most noticeable shifts are closely associated with those parity cohorts (i.e. mothers of one child) that were immediately affected by the political changes of 1989 and subsequent transformation. Even though second-birth rates in short time intervals (up to 24 months) slightly declined among first-time mothers giving birth before the Velvet Revolution, Figure 5.12 reveals a sharp decline in second-birth rates among women who had their first child in the revolutionary year of 1989 and during the subsequent five years. Conversely, a gradual increase in second-birth rates over longer time (birth) intervals was restored during the 1990s.

There was a marked and almost immediate downward shift in second-birth rates 25-36 months (3rd year) after the first birth for the parity cohorts of 1990-1994 and a subsequent considerable upward shift for the parity cohorts of 2001-2007. From the mid-1990s, the highest

[21] For yearly parity cohorts births of order 2 at duration d (in months) are related to the initial number of women giving birth to their 1st child in given year.

second-birth rates were found to be in the 3rd and 4th years after the first delivery. The three-year interval in the timing of a subsequent child is, importantly, linked with parental leave legislation since parental leave (known as additional maternity leave until 2001, see chapter 4) is included in the Labour Code and linked to the mandatory reservation of work positions until the child's third birthday. The fourth year is not linked with the reservation of a work place; however, since 1995 entitlement to parental allowance has extended up to the child's fourth birthday. Therefore this continuous increase in second-birth rates is probably linked both with a trend to postpone second births and with the possibility to draw the parental allowance.

In terms of evaluating the modification of the three different "speeds" at which parents draw the parental allowance today, the time elapsed since 2008 is too short to allow an analysis of the possible effects on birth intervals in the data.

Figure 5.12 Duration-specific second-birth rates by year at first birth, first-birth parity cohorts 1986-2007

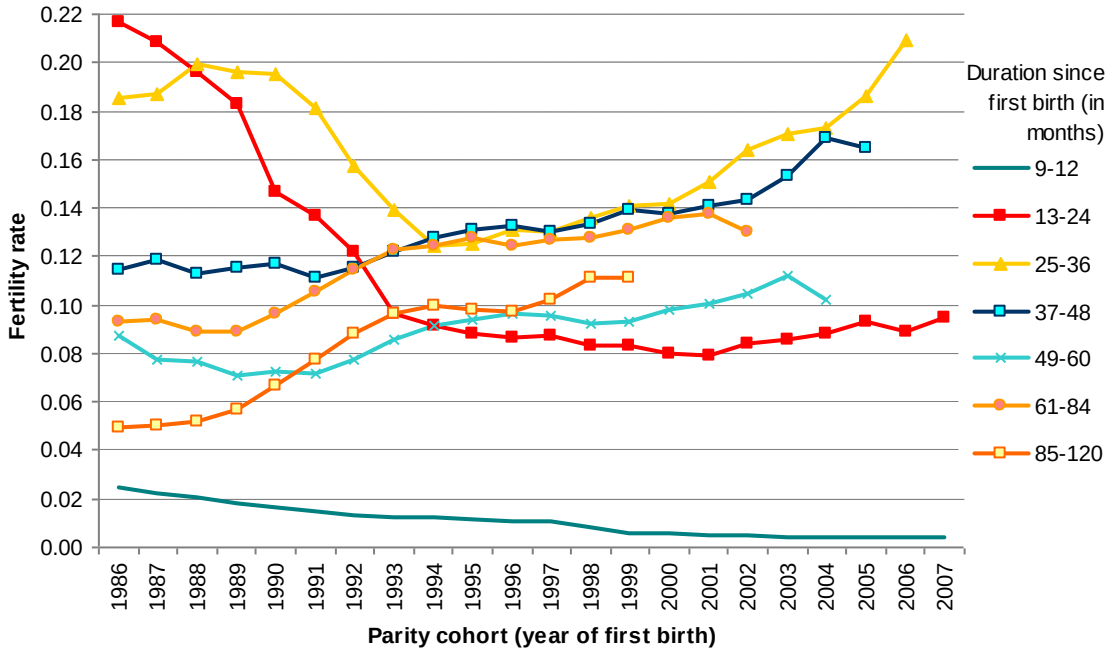
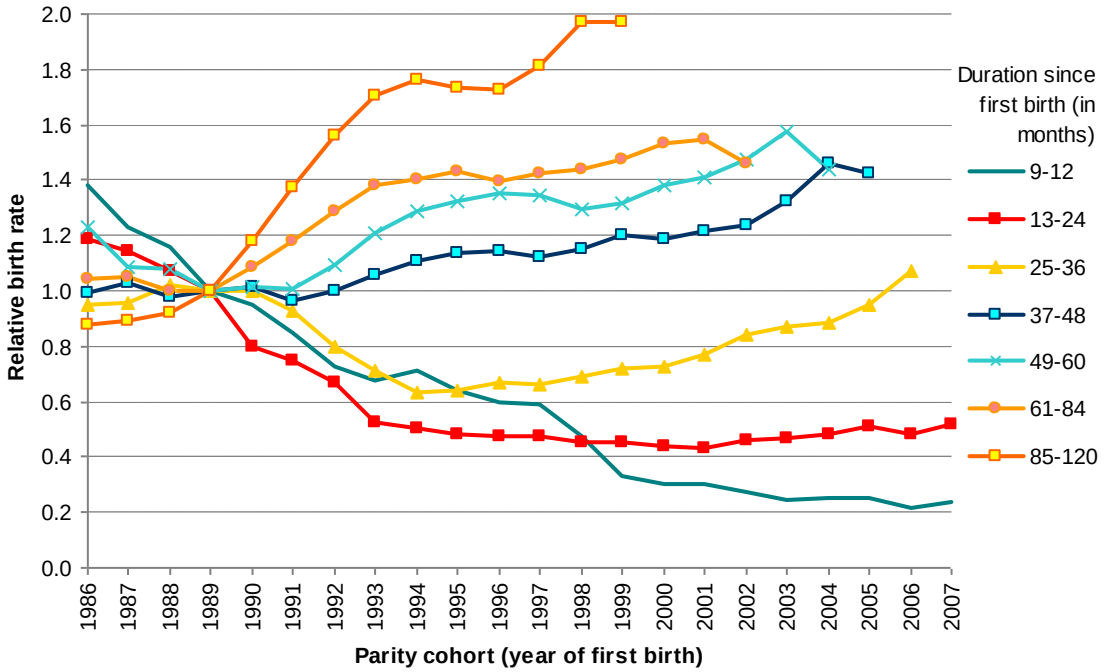


Figure 5.13 plots second-birth rates according to birth intervals for women who had their first child between 1986 and 2007, relative to second-birth rates for women who became mothers for the first time in 1989. The first-birth parity cohorts of the early 1990s showed a massive decline in second-birth rates during the three years after the first delivery compared with the 1989 first-time mothers. The 1995 first parity cohort shows a decline of almost 40% during the first and third years and of more than 50% during the second year following the first delivery. Mothers who gave birth to a first child more recently showed an increase in second-birth rates during the third year and only the 2006 parity cohort surpassed the benchmark level (the 1989 parity cohort).

Conversely, an increase (e.g. of 13-40% for the 1995 parity cohort) in second-birth rates at longer (37-84 months) intervals can be observed. The biggest increase was detected in the

longest (8-10 years after the first delivery) birth interval - almost 80% during the first half of the 1990s and 100% for the 1998 and 1999 parity cohorts.

Figure 5.13 Relative second-birth rates, first-birth parity cohorts 1986-2007 (1989=1)



The results illustrated in Figures 5.12 and 5.13 suggest important shifts in second-birth rates for different birth intervals. To see whether they had any lasting effect and how important such an effect might be, Figure 5.14 represents (partial) parity progression ratios two, three, four, five, six and ten years after the birth of the first child.

The prolongation of birth intervals in the early 1990s had an effect on cohort second-birth progression ratios. Important shifts can be observed at shorter durations, e.g. up to 5 years after the first birth 63 per cent of mothers from the mid-1980s had their second child compared to only 46 per cent of 1993 first-time-mothers (Figure 5.14). Mothers who had a first birth just before 1989 and in the first half of the 1990s reduced second births in the subsequent three years significantly. Whereas among the 1986 parity cohort almost 55 per cent of mothers had their second child within 4 years (which means that these mothers had a second birth before the political changes or were already pregnant at that time), only 36 per cent of the 1994 parity cohort did likewise.

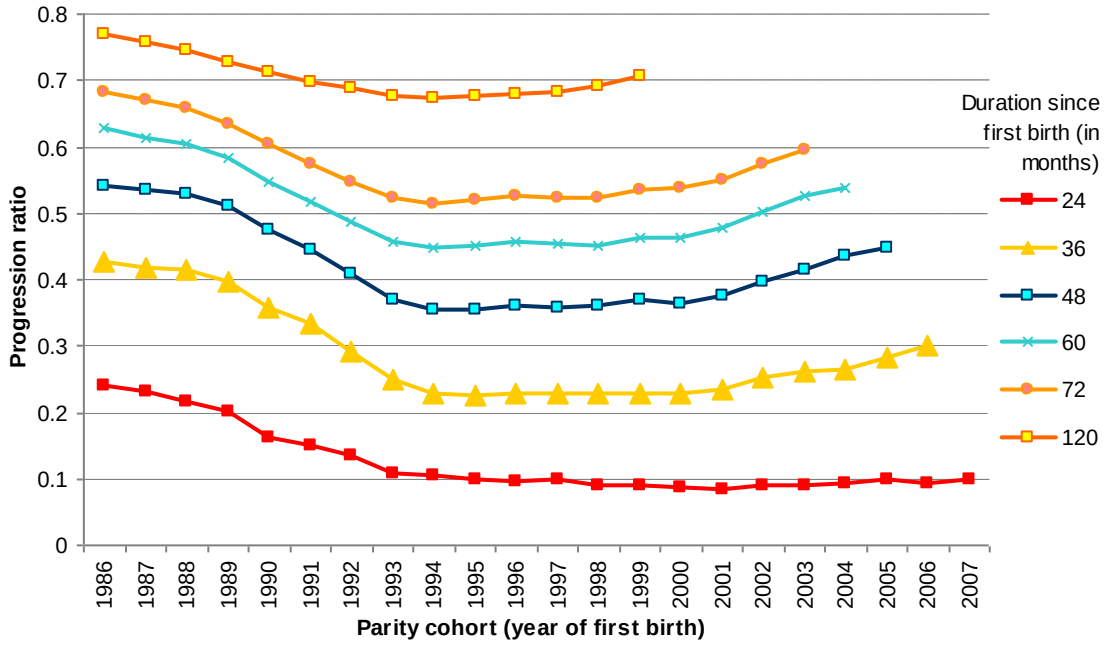
Changes in duration-specific rates in the first half of the 1990s apparently did not fully compensate for each other and the effect of decreasing fertility in shorter birth intervals was not counterbalanced by higher second-birth rates over longer durations. Whereas 10 years after the first birth, 77 per cent of 1986 first-time-mothers had a second child, only 67 per cent of the 1993 parity cohort did likewise. Today, it is clear that parity cohorts from the late 1980s and early 1990s did not subsequently fully recover in terms of second births.

Since the mid-1990s cohorts, the effect of birth rates in shorter intervals has ceased to reduce overall progression ratios to second birth. Relatively stabilised second-birth rates in the

second and third year following the first birth have been partly counterbalanced by higher second birth rates over longer durations and the 1999 parity cohort again exceeds 70 per cent of mothers having their second child within 10 years of the first birth.

However, it is apparent that progression ratios to second birth largely depend on the fertility quantum in shorter birth intervals. An increase in second birth rates during the 3rd year (25-36 months) following the first birth is reflected in an increase in progression ratios in each subsequent birth interval. For the 2003 parity cohorts, it is possible to reconstruct their second births only up to a period of six years by which time more than 50 per cent of mothers had already had their second child, which is approximately 10 percentage points more than among the parity cohorts of the second half of the 1990s.

Figure 5.14 Duration-specific progression ratios to second birth, first-birth parity cohorts 1986-2007



5.6 Childbearing and marriage – an increase in extra-marital births

Since the 1990s both fertility and nuptial behaviour has undergone important changes one of the consequences of which has been a rapidly growing percentage of extra-marital births. Since the 1990s women (and men) born in the 1970s have been reaching reproductive age and these generations typically exhibit different marital behaviour than previous generations, i.e. they postpone marriage to a later age and exhibit a relatively low marriage intensity (Fialová 2007a). The proportion of children born outside marriage more than quadrupled between 1990 (8.6%) and 2008 (36.3%).

Until the early 1990s the Czech Republic had a low number of extra-marital new-borns with less than 9 per cent of children born out of wedlock. The characteristic pattern of the Czech

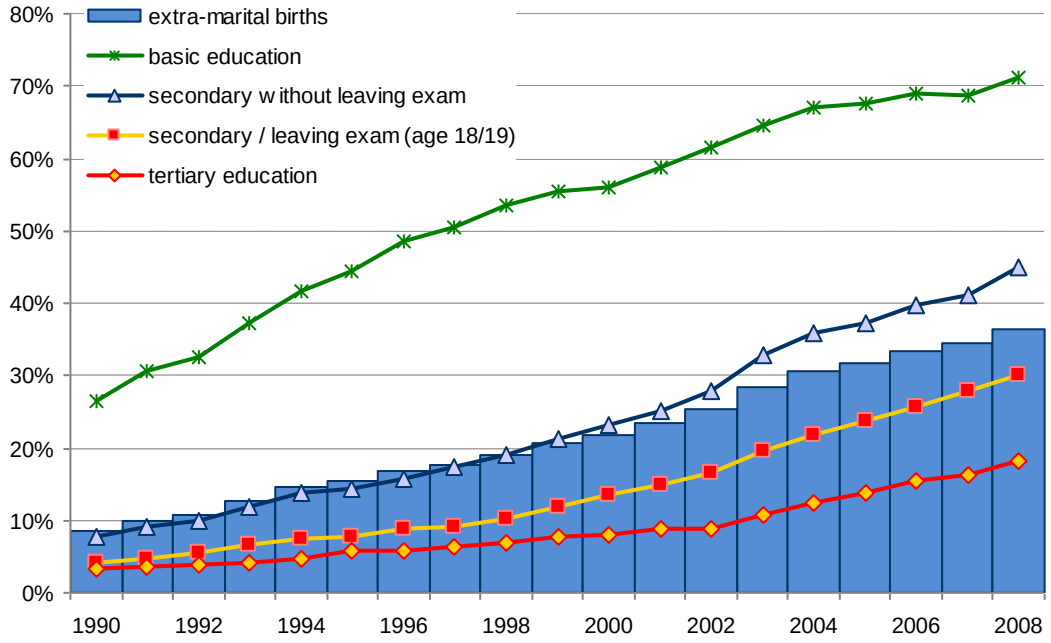
population was universal early fertility occurring within marriage (92 per cent of all children were born to married women), even though premarital conceptions (within 8 months of the wedding according to the first parity birth rate) were frequent (up to 1994 reaching values of approximately 55 per cent).

However, throughout the 1990s the proportion of extra-marital births gradually grew to a total of 36 per cent of children born to unmarried women today (2008). Childbearing outside marriage is especially common in the case of first births (46 per cent of first-order births were out of wedlock in 2008; Figure 5.16) and has become typical for women with the lowest level of education (Figure 5.15). 71 per cent of new-borns whose mothers have completed the lowest level of education only were born out of wedlock in 2008 and women with a basic education delivered their first parity child out of wedlock in 84 per cent of cases. University educated women most frequently give birth to children within a married union and this tendency continues to prevail (Kantorová 2002, Rychtaříková 2007, Zeman 2007a).

Zeman (2007b, 2009b) shows, when analysing the sequencing of conception and birth of the first child and of the first marriage, that the proportion of women who conceive their first child after marriage has not changed dramatically in any educational category since the beginning of the 1990s (even though there are pronounced differences between educational categories since less than 20% of first births are conceived within marriage among low educated women compared to more than 60% among university educated women). Conversely, important changes have been observed with respect to the behaviour of single pregnant women. During the communist regime pregnancy was a valid reason for marrying immediately before delivery. Today, pregnant unmarried women tend to stay single; however the actual proportion of this group and the rapidity of the increase differ significantly according to educational level. Zeman (2007b) shows there was a gradual increase to 19% of single mothers in 2005 among highly educated women but a rapid and sharp increase to 80% among women with only a basic education.

The most significant increase in the proportion of non-marital births was counterbalanced particularly by a decrease in premarital conceptions (Zeman 2009b). However, the proportion of lone mothers has increased considerably and Zeman's analysis reveals that about one half of non-married mothers experience neither marriage nor second childbirth during the six years following first childbirth (Zeman 2009b: 105).

Figure 5.15 Proportion of extra-marital births by educational level of the mother, 1990-2008

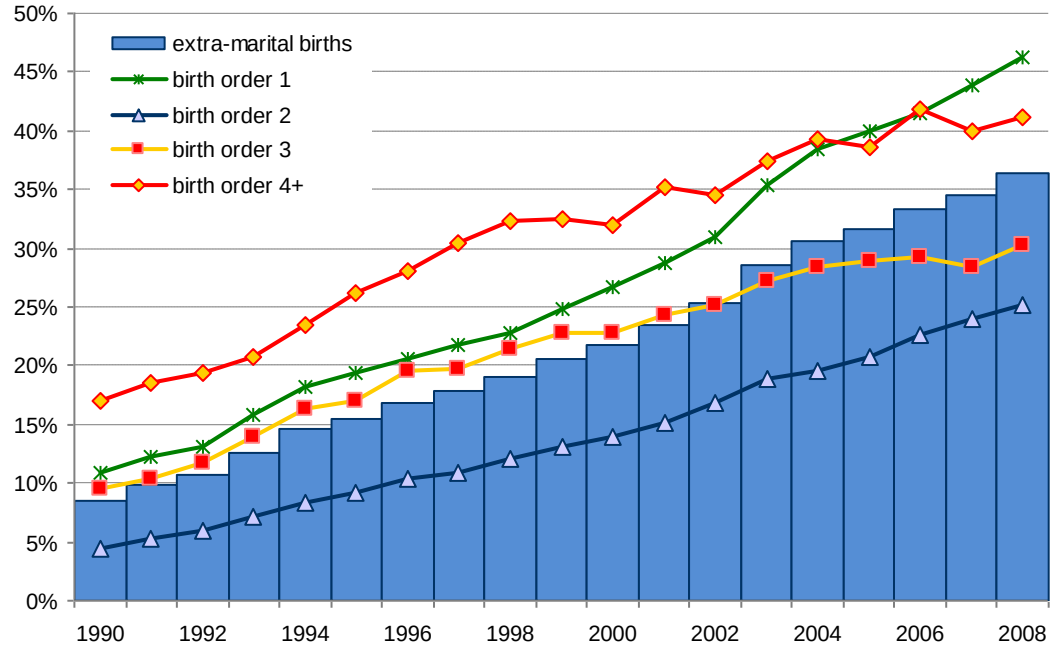


Source: CZSO, author's computation

The proportion of extra-marital births is significantly different with respect to birth order. Since the 1990s extra-marital births have represented an increasingly important proportion of fourth and higher-order births and particularly among first-order births. The latter are especially important as first-order births are the most numerous category of birth order and thus this proportion of extra-marital births influences the total share of out of wedlock births. Conversely fourth and higher order births comprise less than 4% of today's live births, however the high percentage of extra-marital births within this group is remarkable and is probably related to increasing extra-marital childbearing among older women and to the fertility behaviour of certain groups with certain distinctive features with regard to the number of children desired that differ markedly from prevailing societal norms.

Concerning second order births, the proportion of extra-marital childbirth has remained at the lowest level compared to other birth-orders over the whole period but has been increasing at the same pace as higher birth orders. The difference can be attributed to the fact that a proportion of first children born out of wedlock are born to cohabiting partners who today prefer not to marry during the pregnancy but rather after the child is born. According to an analysis of non-marital childbearing, one quarter of mothers who were not married when they had their first child married after childbirth (Zeman 2009b).

Figure 5.16 Proportion of extra-marital births by birth order, 1990-2008

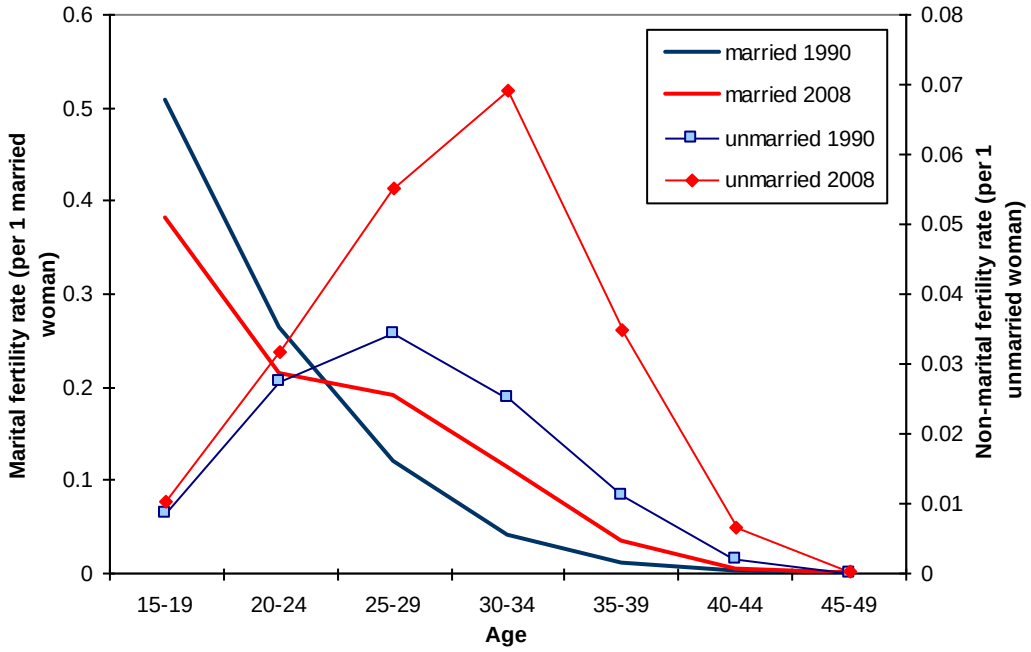


Source: CZSO, author's computation

A further distinctive feature specific to extra-marital fertility is the age structure of mothers who give birth out of wedlock. One specific group concerns very young women (14-19 years old) who proportionally exhibited the most significant change during the 1990s: in 1990 unmarried women represented 18 per cent of mothers within this age group but this figure had risen to 66 per cent by 2000. A similar increase can be observed within the 20-24 age group rising from a value of 6 per cent to more than 25 per cent in the same period (Kantorová 2002). A typical example of a single mother today in the Czech Republic, as characterised by Rychtaříková (2007), is a woman with a basic education who gives birth to her first child around the age of 20 (see also Hamplová et al. 2007).

The rise in the percentage of children born to young single mothers (below age 20) issues from changing approaches to early marriage. There is a growing awareness of the fact that at this age it is difficult to secure a family and to create a suitable environment for rearing a child. More tolerant attitudes and the increased acceptance of premarital cohabitation have given pregnant teenage girls the option of not marrying if the only reason for marriage was to avoid being stigmatised by the community. The social climate of the 1970s and 80s made young women and their families go to great lengths to legitimise the pregnancy and the conceived child itself. Recent qualitative research among teenage mothers reveals that if the young woman maintains a relationship with the father of the child, the most common form of partnership is the consensual union (Vašková 2005, 2006). In 2005 in the 15–19 age group nine out of ten live-born children were born to unmarried women and in the 20–24 age group it was every second child (Fialová 2007b).

Figure 5.17 Age specific fertility rates by marital status 1990 and 2008 (live-born children per 1 woman of a given age group and marital status)



Note: rates of the first kind

Source: CZSO, author's computation

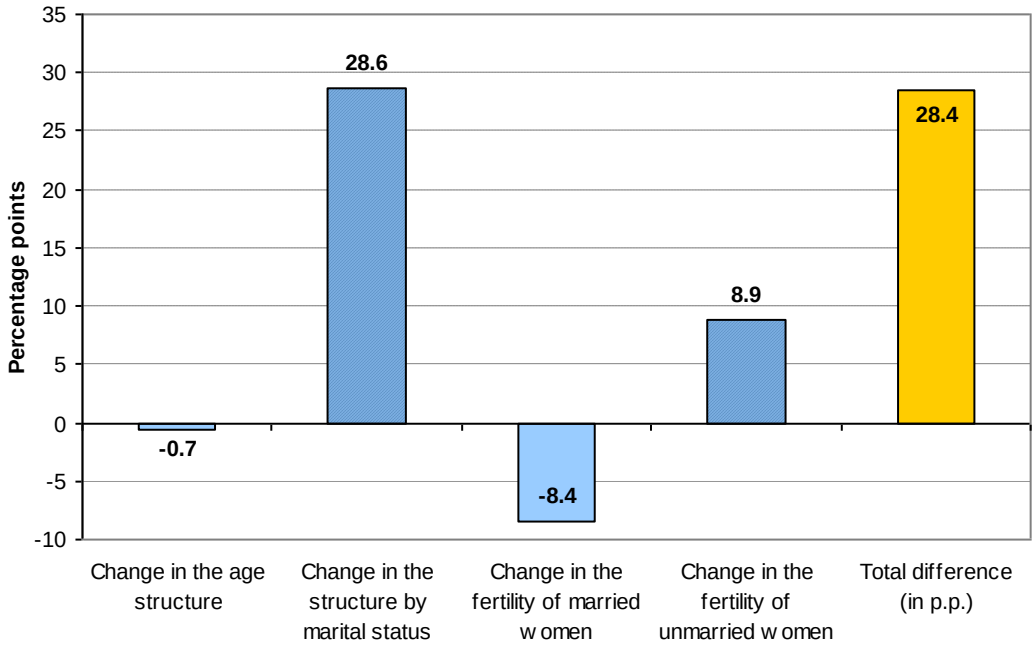
The second female group which indicates a higher out of wedlock birth rate is older (an increase was observed among single women aged 30-39 over the same period and, from 2000, among women aged 25-29) and whose higher parity fertility is taking place within a new partnership following divorce. In the 1990s the number and proportion of extramarital births began to increase at a more rapid rate among older women and in 2005 accounted for 32 per cent of children born to mothers aged 35-39 and 37 per cent of children born to mothers over 40. These mothers were mainly divorced women, with two-thirds of those over the age of 35 being divorced (Fialová 2007b).

The proportion of children born out of wedlock is a result of different factors – the age structure of women, the percentage of married women and the birth rates of married and unmarried women. In order to analyse which of these four components accounts for the increase in the proportion of extra-marital childbearing it is necessary to "decompose" these components (Das Gupta 1994). As the percentage of extra-marital births only began to increase at the end of the 1980s the change in this proportion between 1989 and 2008 must be analysed using decomposition methods (see Rychtaříková 2007).

The share of extra-marital births was 7.9 per cent in 1989 and 36.3 per cent in 2009; therefore the increase reached 28.4 percentage points. Figure 5.18 plots four components of this rise which represent a) the change in the age composition of women of reproductive age (changes in the age structure within the age group 15-49); b) the change in the proportion of married and unmarried women in this age group; c) the change in the fertility intensity of

married women and d) the change in the fertility intensity of unmarried women (single women, divorced and widowed women).

Figure 5.18 Decomposition of the change in the proportion of children born out of wedlock into four components (change between 1989 and 2008)



The most important factor regarding the increase in the proportion of live births to unmarried women was the change in the structure of women according to marital status. During the last twenty years the proportion of married women of reproductive age decreased from 68 per cent in 1989 to 46 per cent in 2008 while the proportion of unmarried women increased by 22 percentage points mainly because of the increase in the proportion of single women in young age groups. This change in the structure of women according to marital status caused an increase in the percentage of out of wedlock births by 28.6 percentage points (Figure 5.18).

The second component which contributed to the increase in the proportion of non-marital births over the last 20 years is the change in the fertility intensity of unmarried women. The increase in fertility among unmarried women (see Figure 5.17) contributed to the increase in the proportion of non-marital births by 8.9 percentage points.

Conversely, two factors counterbalanced the increase in the proportion of out of wedlock births. The change in the age structure of women of reproductive age decreased the percentage of children born to unmarried mothers by 0.7 percentage points. The change in the intensity of fertility among married women influenced non-marital fertility more strongly since the altered fertility behaviour of married women decreased the proportion of children born to unmarried mothers by 8.4 percentage points.

The sum of these four components results in the difference (28.4 percentage points) between the proportion of non-marital births in 1989 and 2008. Plotted results show that the most important factor behind the increase in the share of non-marital births is the increase in the

proportion of unmarried women, whereas the change in marital and non-marital fertility contributed less (see also Rychtaříková 2007).

Given the increasing number and share of extra-marital births, the wider debate shifts to the issue of the proportion of extra-marital births occurring among single women who remain with a child as lone mothers and, on the other hand, to the question of the percentage of extra-marital births occurring in conditions of unmarried cohabitation forming a two-parent family. Since 2007 data on fathers and extra-marital births has been collected by the Czech Statistical Office. Of the total number of extra-marital live-born children, information on the father is lacking in about one third of cases. In 2007 information on the father was provided in 72 per cent of cases and in 2008 in 88 per cent of cases (Štyglerová 2008, 2009). In general, the largest proportion of missing information on the father in the birth certificate of a child is related to lower educated mothers (e.g. in 2007, 82.3% of births to women with a basic education were extra-marital births and in one half of these cases information on the father was lacking; Štyglerová 2008). These statistics reveal that the lower the level of education of the mother, the higher the chance of extramarital births and the higher the chance of a new-born having no information on the father in the birth certificate.

However, such figures raise further questions of whether, in cases of missing information on the father of the child, this child will be raised by the mother alone and, conversely, to what extent fathers registered in the birth certificate of a child take care of that child and form a two-parent, functional family together with the unmarried mother.

The findings of a sociological study focusing on extra-marital fertility (Hamplová et al. 2007) indicated a steady increase in the proportion of lone mothers among women giving birth out of wedlock over the last few decades. This phenomenon is especially distinct among low educated women, e.g. in the period 2003-2006 more than half of first time mothers with a basic education were not living with the child's father at the time of birth. Conversely, among university graduated mothers the majority of first children was born in the marital union and if a non-marital birth occurred the mother most frequently was found to live together with her partner in a consensual union.

5.7 Conclusion

Over the last twenty years reproductive behaviour has changed profoundly and the reproductive patterns of contemporary young adults differ significantly in terms of both the timing and sequencing of family related transitions to those of preceding generations. The progressive postponement of childbearing to higher ages was facilitated by an expansion in modern methods of contraception, particularly the contraceptive pill. The proportion of women of reproductive age prescribed oral contraception increased from 4 per cent in 1990 to 47 per cent in 2008 while the proportion of women using IUDs decreased from 13 per cent in 1990 to 7 per cent in 2008 (UZIS). However, the percentage of women of reproductive age using some method of birth control with their partner is even higher when methods of birth control other than medically

prescribed contraceptives are taken into account. Three-quarters of the women questioned in the GGS 2005 survey and living with a partner (women neither pregnant nor unable to have children for medical reasons at the time of the survey) indicated that they used at least one method of contraception. With regard to age, it is most often young couples who use some form of birth control (92 per cent of women below the age of 25 indicated having used some form of birth control, most often oral).

The gradual decline in **second-order fertility** at a younger age (notably between the ages of 20 and 25) began as early as at the beginning of the 1980s when the pro-natal policy measures of the mid-1970s ceased to be effective in advancing and creating a short-term increase in second-order fertility. During the early 1990s the declining trend of second-order fertility intensified even though the rapid decline in the fertility rates of young women in this case (aged 20-24) began two years later than for first-order fertility due to the sequential character of the process of postponement of childbearing. A recovery in the case of second-order fertility commenced among women aged 30-34 around the year 2000 and in recent years a recovery has been noticeable among women over 35. However, the recovery of second order fertility at higher ages has yet to match the level of first-birth recuperation.

The increase in second birth intensity highlighted by the fertility table method suggests some sort of selectivity mechanism operating with regard to second-order fertility. Since this method controls for the age and parity composition of women, the results reveal that once a woman has one child, i.e. decides to enter the new life stage of motherhood, she tends to continue her fertility career and have a second child. By 2005 second birth intensities shown by fertility tables were above those of 1995 which is a somewhat different result to that provided by second-order fertility rates for the same years.

A decline in second birth intensities occurred among generations born in the late 1960s. This shift indicates that a change in reproductive patterns and a postponement of childbearing to a later age occurred even among those women who, in many cases, already had one child at the time of profound social changes having adhered to the young age pattern of entry into motherhood. Therefore the decline in second births among these women was a direct response to developments in the first half of the 1990s.

Analysis revealed that, compared to a strong tendency towards recovery in the case of first births, the recuperation of second births among those cohorts that postponed, to a large extent, their first births is less intensive. The recuperation of delayed childbearing among cohorts which experienced massive fertility postponement can be seen initially in the transition to first birth and subsequently becomes apparent in the progression to second birth (and higher order births). Therefore catching up effects have to date been less pronounced in the case of second births in the Czech Republic than elsewhere.

The results of parity-cohort analysis confirm these findings. The prolongation of birth intervals in the early 1990s had an effect on second-birth progression ratios. Important shifts can be observed in shorter durations, e.g. up to 5 years after the first birth, 63 per cent of mothers from the mid-1980s had a second child whereas only 46 per cent of 1993 first-time-mothers did

likewise. Mothers giving birth for the first time just before 1989 and in the first half of the 1990s displayed a trend to significantly reduce the frequency of second births in the subsequent three years. Changes in duration-specific rates in the first half of the 1990s were, apparently, not fully compensated for and the effect of decreasing fertility in shorter birth intervals was not counterbalanced by higher second-birth rates over longer durations. Whereas 10 years after the first birth 77 per cent of 1986 first-time-mothers had a second child, this figure fell to 67 per cent of the 1993 parity cohort. Today, it is clear that the late 1980s and early 1990s parity cohorts did not subsequently exhibit a full recovery in terms of second births.

The **two-child family model** was a distinctive feature of the post-war generations and was further strengthened among the generations of the late 1940s and 1950s by the decline in the proportion of women with only one child, which reached a level of below 15 per cent in the generations born between 1948 and 1956. However, the proportion of women with only one child began to increase among women born in the 1960s. Even though these women had not yet finished their reproductive careers in 2001 when population census data was collected, they were in their late 30s at that time. Even if some second children are born at a later age (due to the sequential nature of fertility) it is likely that the proportion of mothers with only one child will increase faster than the proportion of childless women (compare with Sobotka et al. 2008) since the recovery of second births has been less pronounced in the case of older mothers and will most likely not be strong enough to maintain the same proportion of two-child mothers as is recorded for preceding generations.

6. Theories of fertility and explanations for the decline in fertility

In the scientific debate on transforming reproductive patterns and life courses over the last 20 years in Central and Eastern Europe two basic lines of interpretation of the changes in reproductive behaviour among younger generations of Czech men and women have been proposed. In the context of arguments regarding the scale and significance of the spread of individualistic value systems, the debate tends to be simplified into the "economic crisis" versus the "cultural changes" arguments.

The first approach points to the greater economic and social insecurity associated with the various transformation processes in the Czech Republic and, in particular, to the increase in the direct costs of child-raising, the decrease in living standards of families with children and poor housing opportunities for young people which have led to a pragmatic tendency to postpone starting a family (e.g. Rychtaříková 1996). The second approach stresses the striking change in ideas, values and culture which have taken place, the results of which include the development of multiple forms of living arrangements, the individualization of values and life styles and, consequently, a drop in fertility to well below replacement level (e.g. Rabušic 2001a, 2001b, Sobotka, Zeman, Kantorová 2003). According to this approach, demographic changes and shifts in values indicate that, despite the palpably different initial conditions, the transformation of demographic behaviour in the Czech Republic is comparable with the changes that emerged at the end of the 1960s in Western and Northern Europe and on which the theory of the second demographic transition (van de Kaa 1987) was based.

The theoretical line stressing socio-economic elements draws from the economic approach and **rational choice theory**. In the 1970s and 80s, economic approaches linked with **microeconomic theory** dominated the research of the factors determining fertility (Rabušic 2001a: 118). According to the theory of the Chicago School and Becker's approach, the key to a decrease in fertility is a preferential shift towards a "higher quality" child. With increasing incomes, families wish to have, and therefore produce, children of a higher quality: the overall value of child services (child services equals the number of children multiplied by the average quality of the child) is thus higher, even if the number of children is lower (Rabušic 2001a: 122). Leibenstein's approach, on the other hand, emphasizes an overall decline in expectations concerning the utility of child services (rather than a shift in emphasis from quantity to quality). He takes into consideration the relationship between social status and consumption preferences (concerning children and the goods and services that compete with them). In an environment where reference groups exert a great influence on family lifestyle, relative, not actual, income is decisive in determining the fertility of a couple.

Richard Easterlin develops the relative income approach further, identifying it as the relationship between the income opportunities and material aspirations of the couple

(Pollnerová 2001). Thus for him, the major factor influencing fertility is the relationship between the material aspirations of young people and the resources they have to draw on; so fertility is a function of the perceived economic level of the family rather than of its absolute economic level. In addition, according to Easterlin, relative income amounts are substantially influenced by the changing size of generations, depending on the size of the cohort entering the labour market, though of course depending also on the size of previous generations, since expectations concerning economic levels have already been formed in childhood. However, in her attempt to verify Easterlin's theory on the specific situation of the transforming Czech, Hungarian and Polish economies, Pollnerová concludes that one cannot ignore the influences of the labour markets in those countries due to the complex situations therein and therefore it is impossible either to explain or to predict fertility trends solely on the basis of relative cohort size (Pollnerová 2001: 295).

The position of young people in the labour market and its influence on the reproductive behaviour forms the central pillar of the **globalization theory** proposed by Mills and Blossfeld (2003, c.f. Hašková 2009) according to which large structural changes, attributable to globalization and the development of new technologies, have affected the quality and stability of jobs in industrialized countries, with stable jobs being replaced by short-term, unstable jobs with poor wages, skill requirements, working benefits and conditions (Hofmeister, Mills, Blossfeld 2003) which affect especially those who enter the labour market and are not yet stabilised there, i.e. young people. Uncertainty concerning economic and social developments on the part of young people, stemming from their position in the labour market, influences decisions on the postponement of long-term commitments such as marriage and parenthood. Given this situation, the rational choice is to cohabit and remain childless until such time as economic and social uncertainty decrease.

The second approach fits observed changes in family and fertility patterns into the broad conceptual frameworks of the **second demographic transition**. The concept of the Second Demographic Transition (SDT) (introduced for the first time by the authors Ron Lesthaeghe and Dirk van de Kaa in 1986 (van de Kaa 2008)) refers to the major changes in demographic behaviour and fertility and partnership formation observed from the late 1960s in many Western and Northern European countries the most important of which consisted of a decrease in fertility levels, the postponement of marriage and childbirth, increased divorce rates and the spread of unmarried cohabitation. An overview of the various sequences of the Second Demographic Transition, based on observations covering the period 1965-1995, recognizes both a marital and a fertility transition (van de Kaa 1998: 12):

1. Decline in TFR due to reduction in fertility at higher ages: decline in higher order birth rates.
2. Avoidance of pre-marital pregnancies and 'forced' marriages.
3. Notwithstanding; the mean age at first marriage continues to decline for a while.
4. Postponement of childbearing within marriage, fertility among young women declines, decline in lower order birth rates which accentuates the decline in period TFR.

5. Increase in judicial separation and divorce (when allowed).
6. Postponement of marriage largely replaced by pre-marital cohabitation, increase in age at first marriage.
7. Cohabitation becomes more popular, marriage postponed until bride is pregnant, increase in premarital births, increase in mean age at first birth.
8. Legislation permitting sterilization and abortion further reduce unwanted fertility: fertility at border ages of childbearing declines further.
9. Cohabitation gains further support, is frequently also preferred by the widowed and the divorced.
10. Cohabitation increasingly seen as an alternative to marriage, extra-marital fertility increases.
11. TFRs tend to stabilize at low levels.
12. TFRs increase slightly where women who postponed births commence their fertility careers; increase in lower order birth rates at higher ages of childbearing.
13. Not all postponed births can be realized in the remaining years of childbearing.
14. 'Voluntary' childlessness becomes increasingly significant.
15. Cohort fertility appears to stabilize below replacement level.

In the theoretical concept of the second demographic transition, such changes are closely associated with important shifts in values which are reflected in the weakening of the institution of the traditional family. A decline in fertility rates far below the replacement level facilitated by improvements in contraceptive technology and the wider accessibility of modern contraception was seen as the main feature of the second demographic transition (van de Kaa 1987). The concept was subsequently further expanded and contextualized with a number of structural changes (such as modernization, expansion of higher education, development of the service economy and the welfare state), cultural changes (secularization, rise in individualistic values, importance of self-fulfilment) and technological changes (adoption of modern contraception, advances in assisted reproduction, the boom in new information technologies) (Sobotka 2008: 172).

Thus the main distinction from the first demographic transition/demographic revolution lays in the ideational and cultural change. The author of the SDT theory stressed: *"The determinants of both transitions are changes in the structure, culture, and technology of societies. But, there is a certain shift in emphasis. Socioeconomic development and a decline in mortality appear to have been prerequisites for the onset of the first demographic transition although it has affected countries that differ widely in social structure, political system and economic system. While the proponents of the idea of a second demographic transition stress that the changes in economic and technological conditions (the pill) remain important determinants of that transition they*

tend to highlight the role of ideational change. (....) *Ideational shifts appear to have changed people's attitudes towards marriage, childbearing, the responsibility for one's own health, and demographic change more generally. Since people highly value each individual's freedom of choice and seek self-fulfilment in work and relationships the level of fertility typically declines to very low levels."* (van de Kaa 2008).

The same subject appears in sociological literature, where new forms of family behaviour (including unmarried cohabitation and non-marital fertility) have been interpreted as a sign of the process of the individualization of life courses and the development of Western European and North American society towards a new modernity (Beck 1992, Giddens 1990). Thus the transformation of intimate relationships, described by Singly (1999) and Sullerot (1998) e.g. within which the role of procreation in an intimate relationship recedes and aspects of sexual attraction or shared intimacy take on greater importance, constitutes an ever greater influence on issues related to the arrangement within partnership relationships, parenthood and the ultimate number of children in families.

Ulrich Beck (1992) discusses the return to the nuclear family as one possible scenario of future development; not in the form of a single type of family structure, but rather as a broad spectrum of variations many of which – singles, pre-marital cohabitation or cohabitation as a replacement for marriage, various parental arrangements with respect to rising divorce rates, etc. – will then be integrated into the biographies of individuals as a phase thereof.

Arriès (1980) emphasized the changing attitude towards children in his discussion of the falling fertility rate in Western countries. While the decline in birth rates characteristic of the demographic revolution in the second half of the 19th and the early 20th century was unleashed by enormous emotional and material investment in the child, the current decrease in births rates is the result of the opposite attitude. The former era was labelled by the author as the era of the "child-king"; in the new epoch, the child occupies a less important position. The child has not disappeared from the plans of young people and couples rather it fits in with them as one of several components. However, the child no longer constitutes the essential variable in plans for the future as it did in the 19th century (Arriès 1980: 649-650).

The concept of the second demographic transition also refers to Inglehart's concept of the *silent revolution* (1977) which signifies a major intergenerational shift in the values of the populations of developed societies. Inglehart argued that together with the advancement of the modernization process, emphasis on the achievement-oriented norms of an industrial society (survival and economic achievement) will give way to an emphasis on the quality of life, individual choice of lifestyle and individual self-expression. This shift is characterised as a change from 'materialistic' values (economic and physical security) to 'post-materialistic' values (autonomy, individualism, individual self-expression and quality of life).

Even though the concept of the second demographic transition has begun to play an essential role in discussions and analysis of European changes in demographic behaviour, reproductive patterns and future outlook, doubts persist among demographers on the validity of this concept (for a summary see e.g. van de Kaa 2008, Sobotka 2008). Some authors consider

the idea of a second transition inappropriate. There is no consensus on the universality of the process or on the timing of the onset of the SDT. Moreover, one of the weaknesses of the concept is seen in the absence of an indication of a logical end-point to the transition (the term "transition" is commonly assumed to denote passage from one well-defined state to another). Finally, as far as placing emphasis on the power of ideas in shaping human behaviour is concerned, some critics argue that structural factors are of over-riding importance and remain unconvinced that the power of ideas is sufficiently great to play the principal role in changing demographic regimes (van de Kaa 2008).

Despite criticism of the second demographic transition concept and despite the presence of ambiguity among demographers and social scientists as to whether the demographic developments in former communist countries after 1989 can be placed in the SDT framework, this theory has been widely discussed over the last two decades by both foreign and domestic authors in connection with the analysis and interpretation of the changing demographic situation in the post-communist countries of Central and Eastern Europe. An analysis of different countries reveals that in this region there seem to be as many models of transition and changing demographic patterns as there are complex and diverse societies and cultural heritages. However, a number of shared features with regard to the second demographic transition in Central and Eastern European countries have been identified by Sobotka (2008: 193) and are as follows: *"1) The late occurrence of many of the behavioural and value changes typical of the transition, especially those related to alternative living arrangements; 2) The rapidity with which many features of this transition emerged during the 1990s; 3) The importance of structural and economic factors, especially in the early stage of the transition; and 4) The importance of disadvantaged social groups in the spread of some of the new types of family behaviour, especially non-marital childbearing and, in many cases, unmarried cohabitation."*

Kohler, Billari and Ortega (2002) studied the lowest-low fertility countries in Europe and argue that the patterns of the postponement transition can be explained by a combination of individual-level incentives for delaying childbearing and the aggregate-level implications of social interaction. Kohler, Billari and Ortega (2002) argue that the emergence of lowest-low fertility in Europe is due to a combination of five factors. They argue that: 1) *"Demographic distortions of period fertility measures, caused by the postponement of fertility and changes in the parity-composition of the population, have reduced the level of period fertility indicators below the associated level of cohort fertility."* 2) *"Economic and social changes have made the postponement of fertility a rational response for individuals."* 3) *"Social interaction processes affecting the timing of fertility have rendered the population response to these new socioeconomic conditions substantially larger than the direct individual responses. As a consequence, modest socioeconomic changes can explain the rapid and persistent postponement transitions from early to late age-patterns of fertility that have been associated with recent trends towards low and lowest-low fertility."* 4) *"Institutional settings in Southern, Central and Eastern European countries have favoured an overall low quantum of fertility."* 5) *"Postponement-quantum interactions have amplified the consequences of these institutional*

settings, and they have caused particularly large reductions in completed fertility in lowest-low fertility countries due to the delay of childbearing." (Kohler, Billari and Ortega 2002).

Shifts in demographic behaviour in post-communist countries took place under conditions of profound economic transformation which led to increased uncertainties in the life course of adults and especially young people with respect to their future professional and private lives. According to the hypothesis of *postponement transition* (Kohler, Billari and Ortega 2002), although economic changes influenced postponement towards the late childbearing pattern, trends in childbearing behaviour are on-going and relatively autonomous. *"Once this transition is initiated through socioeconomic changes eroding the initial early fertility equilibrium, the population will experience a rapid and persistent delay in the timing of childbearing. Moreover, because the feedback effects resulting from social interactions is the primary driving force of this adjustment process, these shifts in the timing of childbearing may be associated with relatively modest socioeconomic transformations once the postponement of fertility is initiated. Hence, the transition appears to observers as if it is driven by its own momentum."* (Kohler, Billari, Ortega 2002).

As stated above, the two basic tenets of the interpretation of changes in reproductive behaviour in Central and Eastern Europe tend to be simplified into the "economic crisis" versus "cultural changes" arguments. However, some authors (Lesthaege, Surkyn 2002, Philipov 2002) argue that these interpretations need not be mutually exclusive. Structural influences (economic factors) caused by economic and political transformation can be combined with long-term changes in values, and the degree of influence of structural and cultural factors may change over time. Rapid and unexpected changes in the birth rate in Eastern European countries may have occurred as the result of discontinuity in people's lives following the collapse of the Eastern Bloc which accelerated long-term changes in values and their influence on the population's familial and reproductive behaviour. Discontinuity and anomie created the right conditions for a quick and sudden change in ideas and values which is rather a different situation to that of a process of change via a diffusion of ideas and long-term development. The breakdown of norms and the disruption of values led to increased disorientation and thus influenced the various decision-making processes regarding the family and family size. People prefer not to make decisions in conditions of uncertainty, which results in the postponement of childbearing and possibly a decision to have no children at all (Philipov 2002).

The experience of Central and Eastern European countries emphasizes the importance of structural factors in the spread of the demographic trends associated with the second demographic transition concept. Some authors point out dissimilarities with the initial SDT concept of normative change fuelled by economic prosperity which leads to an increase in individual aspiration. In the countries of Central and Eastern Europe certain changes in reproductive and family behaviour (e.g. a pronounced increase in non-marital childbearing and cohabitation) can also be influenced by the emergence of new structural factors that make such behaviour more attractive for people from a socially disadvantaged background (Sobotka 2008).

This can be documented in the Czech Republic where highly-educated women proclaim changes concerning reproduction and family arrangements but where lower-educated women are often forerunners of these changes in terms of real behaviour (Hamplová et al. 2007, Hašková 2009). The paradox of the strongest acceptance of extramarital fertility being declared by highly-educated women, who usually become mothers within marriage, and the strongest emphasis on marriage declared by women with lower levels of education, who most often have children outside marriage, highlights the fact that some of the contemporary changes in family behaviour are not caused by value changes but are, rather, a response to structural barriers in society.

In order to explain the huge differences between the countries of Central and Eastern Europe with respect to the spread and acceptance of the reproductive behaviour associated with the SDT concept, Sobotka (2008) offers two pathways in terms of STD diffusion in these countries the first of which is consistent with the original SDT concept and stresses cultural and value changes which are determined by economic prosperity and characterised by individualism and an orientation towards personal self-fulfilment. *"In this case, new behaviour is first heralded by the more educated and economically more privileged social groups who adopt new preferences with respect to their living arrangements and childbearing and their 'coordination' with other domains of life (education, employment, leisure)."* (Sobotka 2008: 210)

As far as the second pathway is concerned, new family behaviour may first occur especially among deprived groups as a response to profound changes in structural conditions in society, frequently marked by economic crisis. *"In this case, new behaviour is less driven by new choices and personal preferences, and may constitute a reaction to adverse life circumstances. Consequently, as this behaviour spreads, it gradually becomes accepted and adopted by other social groups, which in turn leads to changes in attitudes towards it and its continuous diffusion."* (Sobotka 2008: 210)

The interdependence of factors (value change and structural conditions factors), their combination and changing importance and degree of influence among different social strata is also stressed by Hašková (2009) in her study of childlessness. She showed that the lengthening period of childlessness among young Czechs could not be attributed only to one factor, but that this trend is a result of their combination. She identified factors which contribute towards the postponement of parenthood and extend a period of childlessness: socio-economic factors (income and housing) and situational/positional factors (position in the partnership, employment and health), as well as value factors (interests, attitudes and beliefs) and the actual desire to have a child.

Unlike previous generations young people today place a stronger emphasis on the influence of housing and the economic situation as regards their decision to start a family. Young childless people, however, differ from other groups (people with children and older persons) in terms of the stronger emphasis they place on the work situation (both their own situation and that of their partner) and leisure activities. The prolongation of the period of childlessness is thus not the result only of the value of structural factors; rather their importance with regard to

fertility behaviour differs among young people according to their socio-economic status. Hašková created a dynamic model of childlessness which blurs the sharp line between voluntary and involuntary childlessness which was found to be surprisingly fluid in the narratives and perceptions of young people.

Hana Hašková (2009) also tried to contribute towards the discussion of the reasons behind the decline in fertility during the last 20 years by applying, in the Czech context, the theory of gender equity formulated by McDonald. McDonald (2000 a,b) explained very low levels of fertility in advanced countries by an incoherence between the levels of **gender equity** applying to different social institutions. He provides evidence that in countries with very low levels of fertility, high levels of gender equity are postulated in institutions that deal with people as individuals (such as education and the labour market), while low levels of gender equity apply in institutions that deal with people as members of families (such as industrial relations (terms and conditions of employment), services, government transfers, and the family itself). He argues that *"because of gender inequity, the new uncertainties or risks are greater for women than for men, although both are affected"* (McDonald 2006a: 214). The incompatibility of both working and performing family duties leaves women to choose between children and employment which leads some women to have fewer children than they would like to have.

The difficulty of achieving a combination of the ideal work-life balance, the institutionalised male-breadwinner model and extended withdrawal from work for mothers of small children is cited by authors as the reason for particularly high childlessness among university-educated women e.g. in Germany (Dorbritz 2008) and Austria (Prskawetz et al. 2008). In contrast, in countries like France and Sweden where the ideal work-life balance is feasible and supported by diverse family policy measures, fertility levels are higher and there are smaller educational differentials in terms of childlessness and family size (e.g. Toulemon et al. 2008, Oláh, Bernhardt 2008).

Hašková shows that the increasing market orientation of the gender-conservative environment offers only limited opportunities for combining work and family life for both women and men and consequently this is reflected in reproductive preferences and the plans of young people in Czech society. Under current market conditions, barriers to parenthood and opportunities competing with parenthood are distributed more and more unequally among young people not only in terms of socio-economic status, but also in terms of gender (mainly due to attitudes and institutionally strengthened gender norms regarding maternal care and paternal work). The Czech Republic is one of a number of countries which features a clear conflict between the working and caring roles of women which results in prolonged periods of childlessness. The results arrived at by Hašková (2009), based on in-depth interviews, are in line with the reasoning of McDonald's gender equity theory.

7. A second child - preferences and values of Czech women

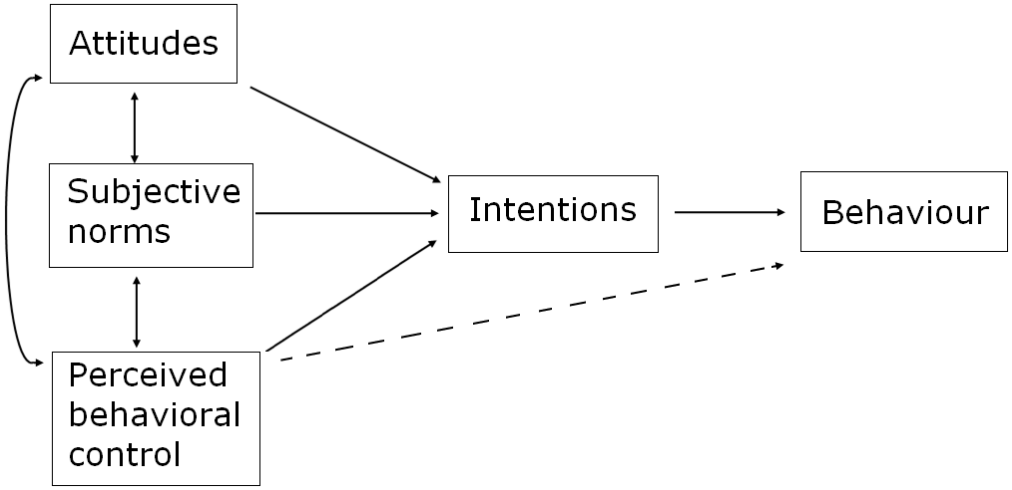
7.1 Studying childbearing intentions in demography

Today's low levels of fertility in many European countries have raised the question whether reproductive behaviour adequately reflects fertility preferences, i.e. preferences in terms of the number of children people would like to have. In the background of any study on fertility intentions lies the assumption that individuals are able to make rational choices concerning if and when they would like to have children (Toulemon, Testa 2006, Philipov et al. 2009). Most theoretical explanations also assume that behaviour reflects the informed decisions of an individual or couple.

The prospective GGS study which is used as a data source in the study was inspired by a variation on the theory of "reasoned action" which provides an insight into the intention formation process. The project was inspired by the most recent version of this theory i.e. the "Theory of Planned Behaviour" (Ajzen 1991) and therefore a consistent set of questions on intentions concerning several choices was designed for the questionnaire in order to allow an analysis of such choices as interdependent and competing processes in the life course (Vikat et al. 2007).

The theory of planned behaviour suggests that "intentions to perform behaviours of different kinds can be predicted with high accuracy from attitudes toward the behaviour, subjective norms, and perceived behavioural control; and these intentions, together with perceptions of behavioural control, account for considerable variance in actual behaviour" (Ajzen 1991). Hence intentions to behave in a specific way are formed with regard to the contribution of three conceptually independent determinants: (1) attitudes towards behaviour – a person's individual evaluation of the positive or negative outcomes of behaving in a particular way, (2) subjective norms, which are determined by normative beliefs and is linked to perceived social pressure to behave or not to behave in a certain way and (3) perceived behavioural control - i.e. a person's perception of the ease or difficulty of behaving in a certain way (Ajzen 1991).

Figure 7.1 Model of planned behaviour (Ajzen 1991)



This social-psychological model provides a potential framework in which to explain not only the decision-making process but also potential correspondence with subsequent outcomes, i.e. with real behaviour. According to this theory, behaviour is a joint function of intentions and perceived behavioural control. The relative importance of intentions and perceived behavioural control in the prediction of behaviour is expected to vary with regard to specific situations and across different behaviours (Ajzen 1991). Possible inconsistencies are explained either by the strength of the attempt at performing or by the degree of control over behaviour which includes internal and external constraints. It is supposed that when behaviour affords a person complete control over behavioural performance, intentions alone should be sufficient to predict behaviour.

The theory of planned behaviour also explains why intentions might not be transformed into real behaviour – intentions could be seen as "latent" behaviour which a person might exhibit when conditions permit the intention to be transformed into real behaviour (Philipov et al. 2009). External conditions (factors) may prevent this transformation from occurring, thus a person may intend to exhibit a certain form of behaviour but finally not do so. As Philipov et al. (2009) pointed out when applying the theory of planned behaviour, any evaluation of the fertility decision-making process in given categories (attitudes, norms and control) reflects background factors which include psychological factors (including personality traits and values), individual differences (including gender, age, education, income, cultural background, religion) and informational factors (including past experience, knowledge) as well as other external conditions which have been identified in previous analysis to be associated with fertility intentions and behaviour.

Changes in fertility preferences play a causal role in most theories of fertility decline (Goldstein, Lutz, Testa 2003, van de Kaa 2008). However, as far as the debate on below-replacement fertility is concerned, great emphasis has been placed on the importance of delayed childbearing and the so-called tempo effects which influence indicators of period fertility. In

recent years surveys in different European countries have revealed that fertility ideals really do seem to be changing and **declining fertility ideals** are thus one of the key features in contemporary studies focused on declining fertility levels in European countries since certain analysis has identified declining desired family size as one of the principal forces driving fertility transitions (Bongaarts 2001). A decline in family size ideals possibly indicates deeper and more durable societal change. It is also one of the three components of the "low fertility trap hypothesis" (Lutz et al. 2006) which depicts factors that might possibly work towards a downward spiral of low fertility. The sociological component of the low fertility trap hypothesis is based on the process of socialisation and the assumption that the ideal family size for younger generations is declining as a consequence of the lower level of actual fertility they see in previous cohorts. Lutz et al. (2006) argue that once the number of children experienced during childhood and adolescence (e.g. number of siblings, number of children seen in other families, in the media etc.) falls below a certain level, an individual's own ideal family size will decline and this could result in a further decline in actual family size and thus the acceleration of the lowering of the ideal family size of subsequent generations. This argument is supported by the findings of Testa and Grilli (2004, 2006) who documented how the fertility regime in which each generation grew up could influence its family size ideals[22]. Goldstein, Lutz, Testa (2003) pointed out that low family-size ideals may create momentum, making it more difficult to raise fertility levels in the future.

Two further components of the self-reinforcing mechanisms described by Lutz et al. (2006) that could result in a continued decrease in the number of births are demographic and economic. The former is based on the fact that fewer potential mothers in low fertility countries in the future will result in a declining number of births. The latter is, according to the authors, based on the gap between personal aspirations for consumption and expected income, which is assumed to result in fewer births. This part of the theory is derived from Easterlin's relative income hypothesis which describes how fertility results from a combination of aspiration and expected income.

Analysis has documented (e.g. Goldstein, Lutz, Testa 2003) that, on average, completed (cohort) fertility has always been slightly less than the ideal family size in industrialised countries. Such a discrepancy could be caused by a number of factors including health problems, not least difficulties with conception, unexpected obstacles both in one's private life (e.g. partnership) and at the macro level. However, a substantial deviation of fertility from stated preferences could be seen as a new phenomenon. Bongaarts (2001) put forward the situation in most developed countries over the last decade, where desired family size was typically two children while fertility remained well below the replacement level, as an example

[22] By using 2001 Eurobarometer data for the EU-15, Testa and Grilly (2004, 2006) show that the context of fertility of older generations (measured by the proportion of childless women and by the mean family size among older generations living in the region) influences the preferences of younger cohorts. The proportion of childless women among older generations in the region influences in a positive way the no-child family ideal and the mean actual number of children of the older generation is positively correlated with the ideal number of children of those who want to have at least one child. In general the lower past actual childbearing in the region, the higher the individual probability of people of reproductive age to prefer smaller families.

of such a deviation. Some authors argue that the difference between preferences and the real number of children is an indicator of unmet demand for children resulting from unfavourable social and economic conditions and inadequate family policy measures (e.g. Chesnais 2000, Hakim 2003). For others the persistence of high ideal fertility suggests that measures of period fertility will eventually rise once this upward trend of rising age at childbearing ceases and the tempo-effect influencing period measures (such as TFR) come to an end (Bongaarts 2001).

The interpretation of the divergences in the number of children being planned and real fertility have taken several forms. It is stressed that the discrepancy between a plan and reality is wholly understandable since fertility intentions are attitudes and attitudes tend to change over the life course. Using such argumentation, fertility is seen as a dynamic process and initial plans for the number of children are adjusted due to unexpected events in life (Rabušic, Chromková Manea 2007).

Moreover, theories on fertility (e.g. Jones, Namboodiri, Leibenstein) argue that the ultimate number of children is more the result of sequential decision-making than of definite planning either at the beginning of marital life or at the age of initial partnership relationships (Rabušic 2001a: 124–125). Thus, decisions about the number of children are formed gradually and reflect both child-raising experiences (fertility intentions have to be examined at different parities, because individual plans and conditions may change after each birth (Monnier 1987)) and the results of negotiating with partners. Many authors have argued that fertility ideals reported in surveys reflect norms and the social climate and respondents tend to give socially acceptable answers (Rabušic, Chromková Manea 2007, Livi Bacci 2001 cited from Goldstein, Lutz, Testa 2003).

Other explanations stress institutional and structural constraints to childbearing and childrearing (e.g. McDonald 2006b) and such analysis is frequently taken as evidence of a demand for policy action.

Chesnais (2000) called the difference between observed and desired fertility rates the '**fertility gap**'. The concept of the fertility gap or child gap aims to compare the desired number of children with the real number of children or with given fertility levels. For example, a recent OECD analysis declared that "the gaps between desired and actual fertility rates have increased over the past ten to twenty years" and illustrates that "the gap is higher in countries where fertility rates are lowest" (OECD 2007: 36). However, when comparing the desired number of children (intended family size) and the total fertility rate both indicators constitute, to a certain extent, a somewhat problematic concept. Firstly, in several works intended family size is defined as the number of children already born added to the number of children planned for the future. This definition, however, makes any unplanned births in the past part of the total planned (intended) family size (Philipov et al. 2009).

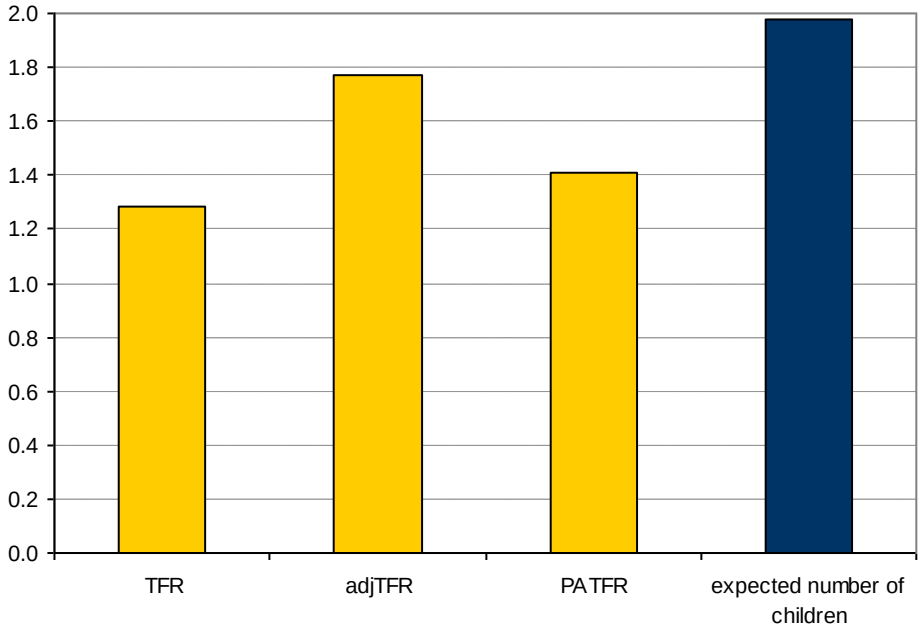
Secondly, a comparison of desired family size with actual fertility could be misleading as the measure of fertility could be severely affected by profound shifts in the timing of fertility (as in the case of the Czech Republic). The TFR has been repeatedly used to estimate the gap,

suggesting a huge discrepancy between actual and intended fertility (often 0.5-0.8 children per woman) (Sobotka, Lutz 2009).

The discrepancy that differs according to the measures used in comparison can be empirically illustrated. Figure 7.2 combines four different fertility and family size indicators of contemporary Czech society. Three of the bars show different indicators of period fertility rates – TFR for 2005, the Bongaarts-Feeney (1998) tempo-adjusted TFR[23] and PATFR[24] (age and parity-specific index) as publisher in the Human Fertility Database. The last bar shows the total intended number of children[25] as collected in the Czech Generations and Gender Survey in 2005 for women aged 18-49.

The difference between the TFR and the expected number of children is substantial at 0.7 children. But the two measures used for the construction of the gap are not comparable since they measure substantially different quantities – expected (or intended) number of children refers to cohort plans and TFR represents a period fertility measure that can be influenced by tempo-distortion. Once intended fertility is compared to the tempo-adjusted fertility indicator a much smaller gap can be observed - the gap reaches 0.21 children for comparison with the tempo adjusted TFR (adjTFR). The gap is somewhere between the two afore-mentioned with a level of 0.57 children when comparing the expected number of children and the index of total fertility computed from age-parity birth probabilities (PATFR).

Figure 7.2 Comparison of period fertility indicators and expected number of children



Source: Human Fertility Database, Czech GGS 2005, own calculations

[23] See Appendix 2.
[24] See Appendix 2.
[25] The total intended family size combines the number of children already born with the number of children women intend to have in the future. For more details see chapter 8.2.

Although this smaller gap between intended fertility and the actual level of fertility (measured by the tempo-adjusted indicator) is not negligible, the level suggests less striking results than the gap measured with the TFR. The aim of this comparison is not to suggest which "fertility gap" is the most relevant for analysis but to show that the results reveal significant differences according to the measures included in the comparison. According to Sobotka and Lutz (2009) such differences observed in different European countries make for a population policy rationale based on trying to help couples reduce the presumed gap between desires and reality much less convincing.

However, the given comparisons are problematic since two different approaches are included - longitudinal and cross-sectional. Fertility intentions indeed represent cohort intentions for children to be born in the future and fertility indicators reveal the period measures of current fertility behaviour[26]. Other surveys based on micro-level analysis and individual responses reveal that the number of children people would like to have is greater than the number they actually have. For the Czech Republic this analysis was carried out by Hora (2008) who tried to analyse the question whether young Czechs face the problem of "missing births". In this analysis the child gap represents a comparison of the ideal number of children or alternatively intended number of children when taking into account real conditions and the number of children the respondent already has.

In the analysis the author shows that the child gap is associated with the life cycle of respondents, and that, therefore, it also differs between men and women (for men the child gap is significantly higher than for women) (Hora 2008). The principal drawback of this approach is that it involves primarily respondents who have not yet finished their reproduction since they were born between 1972 and 1978 (thus aged between 28 and 34 at the time of interview). Nevertheless, the author shows that the difference between the fertility plans of respondents and their actual number of children is influenced by both cultural and structural conditions.

However, the longitudinal approach, that compares intentions expressed when in one's prime reproductive years with final completed fertility methodologically, would be preferable for measuring the differences between intended and realized fertility and for evaluating the role of factors influencing these differences. The main obstacle, however, to such comparison is the need to wait a considerable time to be able to perform cohort fertility analysis.

Fertility preferences and intentions have been studied in sociological surveys for several decades and attention to fertility intentions research in demography is closely linked with the **possibility of predicting fertility**, and the realisation or non-realisation of individual childbearing intentions has become the important question for demographers over recent years (Philipov et al. 2009). However, initial hopes that reported ideal fertility and family size ideals

[26] Bongaarts (2001) concluded his analysis of fertility and reproductive preferences by stating that "the total fertility rate is likely to rise in the not too distant future in countries where the age at childbearing is now rising rapidly. Once this upward trend stops and the age at childbearing stabilizes, the fertility-inhibiting effect of this rise is removed. Fertility will then rise closer to the desired level". A similar pattern has occurred in the Czech Republic recently since observed fertility had been depressed for several years by the timing effect.

would lead to improved accuracy of fertility forecasts were soon disappointed (Goldstein, Lutz, Testa 2003). A major obstacle to the research of this issue is the availability of both appropriate and detailed data at the micro-level. At least two waves of longitudinal data are required in order to track the behaviour of individuals and to study the likelihood of the realisation of measured fertility intentions or the stability of those intentions.

Moreover the definition of childbearing intentions differs from survey to survey. In some surveys the ideal number of children only is studied, however the ideal number of children is an abstract notion and refers to social norms rather than to a realistic individual target. In addition, surveys of the younger generation document the necessity of carefully considering responses especially when they refer for example to the value of children and plans regarding strategies for taking care of them, since such surveys can never determine exactly how the answers represent the internalised values of that generation and to what extent the response is stereotypical. A further complication concerns the fact that the responses of the younger generation often reflect how vague their views are on this subject (Fialová et al. 2000: 80).

Therefore intentions are usually defined with respect to the intended (ultimate) number of children a respondent would like to have by the end of that individual's reproductive lifespan (Philipov, Dorbritz 2003, Philipov et al. 2009). According to Lee's distinction used by Philipov et al. (2009) the intended number of children defined in this way is referred to as a fixed target. Several theoretical and interpretational obstacles with regard to the intended number of children in a lifetime issue particularly from the very long time-scale that younger respondents have for the realisation of their intentions and from the different factors in play during the life course of the respondent that might considerably modify not only the realisation of the intention, but the intention itself. Analysing a sequence of 21 General Household Surveys carried out in Great Britain from 1979 to 2001, Smallwood and Jefferies (2003) found that average intended family size moves downward over time and thus the intended number of children declines with increasing age. However they conclude that this should not necessarily be interpreted as what they call an "unmet need for fertility". The disparity between intentions collected through surveys and subsequent fertility levels is likely to be both a result of the uncertain nature of many intentions and the modification of those intentions by subsequent life events and circumstances. The case in which individuals can change their fertility intentions according to their life conditions and adjust the intended number of children over the course of time might be termed a moving target (Lee 1980, c.f. Philipov et al. 2009: 58).

A further important issue in the study of intentions is the question of timing i.e. whether one studies defined short-term or general, lifelong childbearing intentions. According to recent studies the more "powerful" fertility intentions predictions have been determined when the timing of the behaviour is specified (Philipov et al. 2006). Thus in studies measuring fertility intentions and the realisation thereof the intention of having a child within the next few years is commonly used (within two years – Philipov, Testa 2008, within three years – Kapitány, Spéder 2008, within five years - Toulemon and Testa 2006).

The next two chapters focus on fertility plans. This topic raises one important question - to what extent plans differ from actual realization and if planned numbers of children are really implemented throughout the life course. Chapter 8 is devoted to this topic.

7.2 Fertility intentions of the Czech population - ideal and expected number of children

The universality of the two-child family model in the socialist era is apparent from both fertility behaviour and research on the population climate. According to surveys focusing on family issues and plans with respect to reproduction, the mean number of children planned by young Czech women fluctuated between 2.2 (in 1956, Wynnyczuk 1969) and 2.4 (in 1970) and declined slightly afterwards to 2.03 (in 1985, Kraus 1987) and 2.02 (in 1991) (Kučera 1994: 128). For the whole period, the mean number of children planned by women was above 2 and, conversely, the proportion of women planning to remain childless was very low (1-2%). Women mostly planned to have two children (60-72%), three children were planned by 17-22% of women and one child by 8 to 14% of women (Kučera 1994: 128).

According to recent sociological surveys, the ideal of a two-child family still persists (e.g. surveys carried out by the Research Institute for Labour and Social Affairs, CVVM 2003, Fialová et al. 2000, Hamplová 2000b). Since 1990, two thirds of all respondents in a range of surveys have persistently advocated having 2 children, whilst only one in five consider three children to be the ideal (Šalamounová, Šamanová 2003: 29, 2004: 8). Moreover, young, single people consider having children a natural part of their future lives and, again, the two-child family model remains the ideal ("Young generation 1997" survey[27]). Although the two-child model prevails in all groups, in general the more traditional a person's behaviour is in terms of partnership relationship, the greater the number of children that person considers being the ideal. On average, those who express a preference for a small number of children are those who prefer life-long unmarried cohabitation as their partnership relationship; respondents who plan to marry immediately, without prior cohabitation, tend to want a larger number of children (Hamplová 2000b: 96–97).

More than half of young married couples (respondents aged 35 or younger in the "Housing of Young Generation 2003" survey[28]) said they had planned the number of children they wanted before the wedding ceremony. As far as pre-marital planning is considered, partners often opt for the two-child model; the potential two-child model can be detected in the plans of 80 per cent of those about to marry. Every tenth couple plans to have only one child and only a small proportion plan to have no children or, conversely, want three or more. This research shows that original plans made by couples before the wedding remain consistent over the course of their

[27] The survey focused on examining the value orientations of young single people in the Czech Republic (age at last birthday of 18-29). The Institute of Sociology of the Academy of Sciences of the Czech Republic and the Research Institute for Labour and Social Affairs (RILSA) participated in the survey.

[28] The RILSA survey focused on the family behaviour and housing situation of the younger generations. A total of 1 516 persons aged 20-35 were surveyed.

marriage. People who have not made a firm decision, but instead, waver between one and two or two and three children have a tendency to have a higher number of children ("Housing of the Young Generation 2003" survey). Thus new experiences associated with caring for a child do not tend to change parental plans greatly; major changes are seen only among those who initially do not plan to have any children only one third of whom adhere to their original opinion (this group is however small in terms of absolute numbers).

The ideal number of children is an abstract notion; the expected (ultimate) number of children (Philipov, Dorbritz 2003) more accurately reflects reality and is measured as the sum of the number of children already born, plus the desired additional number of children[29]. Nevertheless, according to the latest data, the expected number of children is not markedly different to the ideal.

Both the ideal and the expected number of children are considerably higher than the number of children actually born where the latter is measured by observed TFR. According to Czech GGS 2005 data, the mean expected family size in 2005 declined slightly in younger age groups where women generally envisage a two-child family and only a small number intend to have three or more children (Table 7.1). Childbearing intentions below replacement level are characteristic for cohorts born after 1980 (and who therefore reached age 18-24 in the year of the interview); as they express more often that older women a preference to remain childless or to have just one child.

Hašková (2009) presented a number of factors that have an impact on both the prolongation of the period of childlessness and increasing ultimate childlessness. Among these factors, the level and type of education, profession, community size, religious beliefs and housing conditions play an important role. In addition, the increasing proportion of young people who do not have a stable partner at the age of 25-30 is becoming more and more important principally when considering a prolongation of the period of childlessness. Moreover, agreement reached by partners with regard to the timing of parenthood could influence the fertility behaviour of childless people, notably in a society where the use of modern contraception is increasing significantly. Disagreement concerning reproduction plans lowers the chances of starting a family.

An analysis of in-depth interviews identified both socio-economic barriers to parenthood and opportunities competing with parenthood, however it showed that the prolongation of the period of childlessness is not the result of only structural or value factors. Their importance with respect to the prolongation of childlessness differs among young people according to their socio-economic status (Hašková 2009). However, according to declared preferences, the choice of life-long childlessness remains an unacceptable option for the majority of (young) Czechs.

[29] Data on numbers of expected children includes both data from childless women and women who already have one or more children (question: "How many more children do you intend to have?"). Thus the parameter represents something of a synthesis between the plans of childless women and realised fertility of women with children, including their intentions with respect to additional children.

A question which arises when analysing sub-replacement fertility in the Czech Republic is whether women will increasingly choose not to have more children after the first delivery. This will, clearly, lead to an increase in the proportion of one-child families in society.

Table 7.1 reveals an increasing proportion of younger women who intend to have one child (17 per cent compared to 13-14 per cent among women 5 to 10 years older). An alternative estimation is presented by Rabušic and Chromková Manea (2007) who focused on those who plan to have one child only and try to answer the question whether it is plausible to expect a growing proportion of one-child families in Czech society. Based on analytical results the authors assume an increase in the proportion of one-child families with about 20-25 per cent of women predicted to conclude their reproductive period with just one child in the next twenty years.

As far as the oldest generations studied in table 7.1 are concerned, the average number of children envisaged is also lower than that for women in the highest fertility level age group at the time of the interview. This emerges primarily as a consequence of the structure of the indicator: the vast majority of women over the age of 40 have completed their reproduction process and do not intend to have additional children (only 1 per cent of the women in that age group plan to have additional children), thus, in the question[30], they refer to children that have already been born. In contrast, with regard to younger women, the number provided combines the number of children already born with the number of children they intend to have in the future, of which not all will be born. Thus completed fertility will, in all likelihood, be lower.

[30] Although fertility is shifting to a later age, women over 40 in the survey sample who consciously planned another child were very much the exception. In that respect, the average number of children corresponds, to a certain degree, to completed fertility; in the 45-49 age group completed fertility is a little lower than calculations for the total population (Rychtaříková 2004), in the 40-44 age group there is only a very slight difference.

Table 7.1 Expected (ultimate) number of children (% and mean), women of reproductive age, 2005

Age	Expected number of children (%)				N	Mean***	95% Confidence Interval	
	0	1	2	3 and more			Lower Bound	Upper Bound
18-19	7.5	17.0	66.0	9.4	159	1.79	1.67	1.91
20-24	6.2	17.3	60.1	16.4	323	1.88	1.79	1.96
25-29	3.3	13.4	63.0	20.3	454	2.05	1.98	2.13
30-34	3.0	13.7	56.1	27.2	497	2.13	2.05	2.20
35-39	4.4	17.2	54.8	23.6	454	2.07	1.98	2.15
40-44	8.5	16.2	56.9	18.4	425	1.91	1.82	2.00
45-49	7.7	22.6	52.4	17.3	452	1.84	1.75	1.93
18-49	5.5	16.7	57.6	20.2	2 764	1.98	1.94	2.01

Note: *** mean expected number of children differs significantly across the age groups, p<0.001, (ANOVA)

Source: GGS Czech Republic 2005

Preferences concerning the number of children in the family among women aged 25-34[31] differ according to the highest level of education achieved. Women with a lower education express a preference for a higher number of children. The results of simple cross-tabulation suggest that women in different educational categories have different preferences (Table 7.2). As the level of education increases, the average number of children desired falls, accompanied by a decrease in the proportion of women who plan to have three or more children. The correlation of different preferences with different educational categories pertains primarily to women aged 25-34. There is no marked difference among either younger or older women with respect to education (table not reproduced).

Table 7.2 Expected (ultimate) number of children by education (% and mean), women aged 25-34, 2005

Education	Expected number of children (%)				N	Mean***	95% Conf. Int.	
	0	1	2	3 and more			Lower	Upper
Basic	5.1	12.8	46.2	35.9	78	2.26	2.02	2.50
Secondary	1.6	9.9	61.8	26.8	385	2.18	2.11	2.26
Secondary (school-leaving exam at age 18 / 19)	4.0	15.6	60.4	19.9	346	2.00	1.92	2.09
Tertiary	4.7	19.4	58.9	17.1	129	1.92	1.78	2.07

Note: (1)***mean expected number of children differs significantly across the various educational groups p<0.001, (ANOVA) (2) Educational level is characterised as follows: "basic" (uncompleted or basic education only, compulsory education (8 / 9 years)), "secondary" (apprenticeship or secondary education without the School-Leaving exam), "secondary (school-leaving exam)" (completed upper-secondary education with the School-Leaving Exam including follow-up courses) and "tertiary" (higher technical colleges including conservatoires and universities).

Source: GGS Czech Republic 2005

If Czech women from the generations of the period 1966-1975 (thus in their 30s in 2005) have a completed fertility of 2.04 to 2.16 (95% confidence interval for a mean of 2.1 for these generations) and women from the generations of 1976-1985 (thus in their 20s in 2005) have

[31] There is no marked difference between younger and older women with respect to education.

a completed fertility of 1.92 to 2.04 (95% confidence interval for a mean of 1.98 for these generations) it would be well above predicted fertility levels given the low level indicated by the TFR and the sub-replacement fertility ideas held by a certain group of the population would be seen merely as an "interesting issue" rather than a sign of huge changes in the overall fertility level. The questions to be considered are whether these intentions are stable and realistic enough to come to fruition, who formulates the different intentions, to what extent intentions are likely to be realised and which factors inhibit and/ or support their realisation. All these questions will be analysed in subsequent chapters.

7.3 Who plans to have one, two or three and more children?

This chapter includes an analysis of the socio-demographic characteristics of women who intend to have one, two or three and more children and presents some of the covariates that determine whether women intend to have a given number of children in comparison with those who have other fertility intentions.

Apart from examining women who proclaim the ideal of the two-child family, this chapter will also focus on women whose reproductive plans differ from this prevailing tendency – those who plan to have one child or three or more children. Researching families with one child has not, to date, been a main priority in terms of sociological and demographic studies in the Czech Republic. Families with one child are often mentioned in literature only in the context of the low fertility theory and in psychological studies dealing with the topic of being an only child. However, this topic was developed recently by Rabušic and Chromková Manea (2007) who investigated the question "who are the people who have or plan only one child?" and tried to find some of the factors influencing the decision to have only one child. Similar research on people who want to have three children (or more) is not available in the Czech context. Although Pikálková (2003) analyzed the factors that influence the risk of a third birth, she studied the determinants of real behaviour and she analyzes fertility intentions mainly from the perspective of the differing level of education of women. Fertility intentions regarding the three-child family were analysed neither systematically nor profoundly in her work.

Two-dimensional descriptive statistics concerning the intended number of children among different generations of women and among women with different educational levels presented in the previous part (7.2) must be interpreted with caution. Results of this two-dimensional analysis could be affected by other intervening variables and by possible interactions between variables. Therefore the net effect of different individual characteristics is examined by employing the binary logistic regression model. Plans relating to the number of children reflect to a large degree the actual situation of a woman, which is considerably influenced by demographic, geographic and socio-cultural characteristics (e.g. education, family background and partnership status and socio-economic situation).

Three binary logistic models are shown in table 7.3; a separate model for each of the fertility intentions: the intention to have one child, the intention to have two children and the intention to

have three or more children. It is important to emphasize that the intention to have given number of children in this analysis means both 1) have already given number of children and do not plan to have another child and 2) have fewer children but plan to have a given number of children. In the three models, women who prefers given family size are compared with other women aged 18-40 who are planning (or already have) a different target number of children.

Women who declared the intention to stay childless are omitted from this analysis. They can be seen as a distinctive group in terms of life course as they expect to exclude the phase of parenthood[32]. Therefore only women who declared that they want to have at least one child appear in the analysis.

The logistic regression model is used to explain the effects of the explanatory variables on the binary response (whether women plan to have given number of children or not). The response, Y, of a subject can take one of two possible values, denoted by 1 and 0 (for example, Y=1 if a woman wants to have 2 children, otherwise Y=0). Let $x = (x_1, \ldots x_k)'$ be the vector of explanatory variables.

$$\text{logit}\left(\Pr\langle Y=1|x\rangle\right) = \log\left\{\frac{\Pr\langle Y=1|x\rangle}{1-\Pr\langle Y=1|x\rangle}\right\} = \beta_0 + x'\beta,$$

where β_0 is the intercept parameter and β is the vector of slope parameters.

The **dependent variable** was specified differently in each model and was dichotomized:

1. In the one-child family model the logistic regression explains the effects of the explanatory variables on the chance to plan only one child (contrasted to the option of planning more children). The dependent variable is assumed to be 1 for those who expect to have one child (or currently already have one and do not intend to have another child) and 0 for those who expect to have two or more children (or currently already have more than one child).
2. In the two-child family model the logistic regression explains the effects of the explanatory variables on the chance to plan two children (contrasted to other options). The dependent variable is assumed to be 1 for those who expect to have two children (or currently already have two children and do not intend to have another child) and 0 for those who expect to have a different number of children (only one child or more than two children or who currently already have more than two children).

[32] Childlessness as a life strategy of Czech men and women is omitted in this work as this issue has been studied extensively by Hašková (2009). In her work different factors that influence the prolongation of the period of childlessness were identified including socio-economic factors (housing situation, income), personal situation (the relationship situation, position in the labour market and health), values and preferences as well as factors representing the desire to have a child. Hašková demonstrates that the prolongation of the period of childlessness is not predominantly due to only one of the factors mentioned. Their influence varies depending on the socio-economic status of young Czech women and men.

3. In the three-child (or more) family model the logistic regression explains the effects of the explanatory variables on the chance to plan more than two children (contrasted to plan of having fewer children). The dependent variable is assumed to be 1 for those who expect to have at least three children (or currently already have at least three children) and 0 for those who expect to have two children at most.

Explanatory variables were included in the models as categorical variables and represent several demographic and socio-economic characteristics collected in 2005. Categorical covariates were transformed into dummy variables. The explanatory variables for all three models are:

- age - coded into four groups: 18-24, 25-29 (reference category), 30-34 and 35-40 years
- education - refers to the highest level of completed study: basic, secondary without the school-leaving exam at age 18/19, secondary education with the school-leaving exam at age 18/19 (reference category) and tertiary (post-secondary vocational schools or universities);
- partnership status, coded as: single (reference category), LAT – living apart from the partner irrespective of the respondent's legal marital status, cohabitation and married (the category coded "married" implies being married and also sharing the same household with the respondent's spouse);
- socio-economic status, coded as: employed[33] (reference category), unemployed, maternity/parental leave, studying, not working (housewife, other);
- size of the municipality in which the woman lives, coded as: less than 2 000 inhabitants, 2 000-19 999 inhabitants (reference category), 20 000-99 999 inhabitants and 100 000 and more inhabitants;
- religion, i.e. whether the respondent regularly attends a religious service (at least once a month), coded as: attendance at a religious service at least once per month, participation less often/ no participation (reference category);
- number of siblings indicating the size of the family of origin, coded as: no siblings, one brother or sister (reference category), two siblings and three and more siblings.

Data from the Czech Generations and Gender Survey 2005 was used for the analysis. Of the initial sample of 10 006 respondents consisting of men and women aged 18-79 years in 2005 this analysis is concerned with women aged 18-40 (generations 1965-1987). For this age group the expected number of children consists of the number of children already born on the one hand and the number of children desired in the future on the other. Therefore an important proportion of women from these generations have not yet finished their (intended) reproduction compared to women over 40 who mainly declare that their reproduction phase is completed. A total of 1 928 women aged 18-40 who, in the analysis, did not declare their intentions

[33] The reference category also includes self-employed women.

concerning number of children were excluded from the analysis. Women for whom no information on the covariates was available were also excluded from the analysis.

The descriptive findings shown in part 7.2 suggest that the expected number of children differs significantly according to the age of the respondent and, for selected generations, with respect to the level of education. However, these results could be affected by other intervening variables and by possible interactions between the variables. Table 7.3 shows the results of three binary-logistic models analysing to what extent the demographic and selected socio-economic characteristics of women influence their childbearing intentions and expected number of children.

Table 7.3 reveals the odds ratios of expecting only one child (model 1), two children (model 2) and three or more children (model 3). Each binary-logistic regression model was run separately in order to analyse three distinctive groups of women and to evaluate the role of given covariates which might differ across these groups. Final models are shown in the same table for ease of comparison when studying the role of the covariates.

The first model analyses those women who **intend to have only one child** (or currently already have one and do not intend to have another child). According to the results of the descriptive statistics, women with a lower level of education prefer a higher number of children. As the level of education increases, the percentage of women expecting to have one child increases. However this pattern is not proved once the other covariates are controlled in the model. Table 7.3 shows no statistically significant results regarding different levels of education. This suggests that women with different levels of education do not have significantly lower or higher odds of expecting only one child compared to women with completed secondary education without the school-leaving exam at age 18/19[34]. The role of religion was also not proved.

On the other hand, covariates whose effects are statistically significant are detected in the model. For those expecting to have one child, the following covariates play a clear role in the decision-making process: age, partnership status, socio-economic status, size of municipality and size of the family in which the woman grew up.

The effect of age is significant in the last category among the oldest women included in the analysis. Women aged 35-40 are more likely to intend to have one child. This could also be interpreted as a discrepancy between the plans of younger women and reality in which the initial plan has not been fully realized (especially among older women). Given the construction of the dependent variable older women often already have one child and regardless of how many children they wanted to have in the past they do not plan to have any more at present. Though the mean expected family size declined slightly in the younger age groups (see descriptive findings, part 8.2) it is mostly due to the declining proportion of women intending to have three

[34] These findings do not approve the results from other sociological survey published by Rabušic and Chromková Manea (2007). According to their data women with lower education (basic education or secondary education without the school-leaving exam) have three times, respectively twice the chance to have only one child compared to women with tertiary education.

or more children and not because of any significant increase in the number of women intending to have only one child.

Married women were shown to have lower odds of planning only one child than single women. Women with a partner (either cohabiting or not – LAT) but unmarried do not differ statistically in their expectations of having one child from women with no partner. Therefore the fact of being legally married to a partner reduces the odds of planning a small family.

The influence of the socio-economic status of the woman was detected. When compared to employed women, two groups with significantly lower odds of expecting to have one child were evident: women taking maternity/parental leave and students. Given the definition of the variable describing the expected number of children, the former already have one child below the age of 4 and the majority plan to have more children in the near future compared to the reference category consisting of employed women who could be childless to date or have one older child. Women still in education[35] place a comparatively smaller emphasis on the one-child family model. This result on the one side together with no impact of attained level of education on the other do not support the hypothesis that highly educated women in the Czech Republic reduce the number of children they intend to have because of structural barriers in the labour market and given work-life balance conditions and opportunity cost. At least in terms of aspirations such assumptions have not been proved thus far.

One clear influence on the desire to have only one child can be attributed to the fact that a woman grew up as an only child. Women with no siblings have 1.52 times higher odds of planning to have one child when compared to women with one sibling. Women who live in larger municipalities (with more than 100 000 inhabitants) have significantly higher odds of planning to have only one child compared to women living in small municipalities (2 000-19 999 inhabitants). There is no marked difference between the smallest and the middle-sized municipalities, thus it seems that the only distinctive community type category in terms of higher preferences for a smaller family is that of women living in the largest cities of the Czech Republic. It should be emphasized that in logistic regression the net effect or, more precisely, the effect adjusted for other variables that have entered into the regression model is estimated. Therefore the higher tendency to expect one child identified for those living in large cities should not be influenced by the structure of women according to level of education and socio-economic status (as well as other variables included in the model).

The second model analyses women who **intend to have two children** (or currently already have two and do not intend to have another child). The effect of a woman's age is opposite to that revealed in model 1 (1 child). For women aged 30-40 the odds of a preference for two children decreases, which could be regarded as a sign of the strengthening of the two-child family ideal among younger generations of Czech women.

[35] Due to the minimum age limit of 18 years in the survey, 40% of those still in education had already taken the secondary school leaving examination at age 18/19. This means that those surveyed are students at post-secondary schools (higher professional schools and universities). A further 60% had not yet completed the school-leaving exam *("maturita"*) and were in their final year of secondary school.

The odds of planning two children are 1.34 times higher for married women than for single women. On the other hand, a woman who has a partner (either cohabiting or not – LAT) but unmarried does not differ in her intention to have two children from women with no partner. The two-child model is the only one in where a significant effect could be attributed to the highest level of education since women with secondary education without the school-leaving exam have 1.30 times higher odds of planning two children that women with the school-leaving exam *("maturita"*).

A clear influence on the desire to have two children can be attributed to current socio-economic status. Women still in education place the greatest emphasis on the two-child family model with intentions odds 2.48 times higher than those of employed women. The opposite effect can be detected in terms of women taking maternity/parental leave and women performing no economic activity – both unemployed and not working for other reasons (e.g. housewives).

The intention to have two children is influenced by the socio-cultural background of women as judged in terms of religion and the family situation in the woman's childhood. Women with two or more siblings prefer to have two children less often than women with one brother or sister, i.e. they prefer to have a larger family (see the three or more children model discussed below). The results show that a woman's religiosity, i.e. whether she regularly attends religious services (at least once per month), has a negative impact on the intention to have two children. Compared to women who do not regularly attend religious services 'religious' women expect to have two children less often showing rather a preference to have a larger family.

Women living in larger municipalities (with more than 100 000 inhabitants) have significantly lower odds of planning two children compared to women living in small municipalities (2 000-19 999 inhabitants). Once again, there is no marked difference between the smallest and the middle-sized municipalities; only women from the largest municipalities differ in terms of their reproductive plans.

Table 7.3 Odds ratios of binary logistic models analysing expected number of children – model for one child, two children and three and more children, Czech Republic

Intentions to have:		1 child			2 children			3 or more children		
		B	Exp(B)	sign.	B	Exp(B)	sign.	B	Exp(B)	sign.
Age (*ref. 24-29*)	18-24	0.1110	1.12		-0.0005	1.00		-0.1278	0.88	
	25-29	*0*	*1*		*0*	*1*		*0*	*1*	
	30-34	0.1853	1.20		-0.4434	0.64	**	0.5446	1.72	**
	35-40	0.3929	1.48	*	-0.6183	0.54	***	0.6507	1.92	***
Partnership status (*ref. No partner*)	*No partner*	*0*	*1*		*0*	*1*		*0*	*1*	
	LAT	0.1152	1.12		-0.1007	0.90		0.0547	1.06	
	Cohabitation	-0.1097	0.90		-0.1252	0.88		0.4035	1.50	
	Married	-0.8547	0.43	***	0.2913	1.34	*	0.4597	1.58	*
Education (*ref. Secondary/ leaving exam*)	Basic	0.0338	1.03		-0.0532	0.95		0.0707	1.07	
	Secondary	-0.3136	0.73		0.2606	1.30	*	-0.1073	0.90	
	Secondary/ leaving-exam	*0*	*1*		*0*	*1*		*0*	*1*	
	Tertiary	0.0842	1.09		-0.0364	0.96		-0.0877	0.92	
Socio-economic status (*ref. Employed*)	*Employed*[1]	*0*	*1*		*0*	*1*		*0*	*1*	
	Unemployed	-0.2535	0.78		-0.4290	0.65	*	0.9516	2.59	***
	Maternity / parental leave	-1.1864	0.31	***	-0.5209	0.59	***	1.4213	4.14	***
	Student	-1.3212	0.27	***	0.9075	2.48	**	0.2384	1.27	
	Not working	0.5694	1.77		-0.8055	0.45	**	0.5715	1.77	
Municipality size (*ref. 2 000-19 999*)	< 2 000	-0.0664	0.94		-0.1338	0.87		0.2403	1.27	
	2 000-19 999	*0*	*1*		*0*	*1*		*0*	*1*	
	20 000-99 999	0.1342	1.14		-0.0276	0.97		-0.0984	0.91	
	100 000 and more	0.4119	1.51	**	-0.3007	0.74	*	0.0296	1.03	
Religion (*ref. Participation less often/ no participation*)	Participation at religion services at least once per month	-0.1379	0.87		-0.6617	0.52	***	0.9647	2.62	***
	Participation less often/ no participation	*0*	*1*		*0*	*1*		*0*	*1*	
Number of siblings (*ref. 1*)	0	0.4173	1.52	**	-0.1958	0.82		-0.2337	0.79	
	1	*0*	*1*		*0*	*1*		*0*	*1*	
	2	0.1051	1.11		-0.2590	0.77	*	0.3034	1.35	*
	3 and more	-0.3195	0.73		-0.5703	0.57	***	0.9712	2.64	***
Constant		-1.2057		***	1.0581		***	-2.8294		***
N		1 928								

p < 0.5; ** p < 0.01; *** p < 0.001

Note: (1) [1] Both women working as employees and women self-employed are included in the reference category "Employed".

(2) Chi-square is statistically significant in all models – the model with covariates explains the dependent variable better than the model with a constant only. Hosmer-Lemeshow test p> 0.05. The proportion of correctly classified cases is: 81.3% for the model "1 child", 64.9% for the model "2 children" and 80.7% for the model "3 or more children". Nagelkerk R Square is 0.11 for the model "1 child", 0.07 for the model "2 children" and 0.17 for the model "3 or more children", which means that the models explain only 11%, 7% and 17% of the variance of the dependent variable respectively.

(3) Educational level is characterised as follows: "basic" (uncompleted or basic education only, compulsory education (8 / 9 years)), "secondary" (apprenticeship or secondary education without the School-Leaving exam), "secondary /leaving exam" (completed upper-secondary education with the School-Leaving Exam at age 18/19 including follow-up courses) and "tertiary" (higher technical colleges including conservatoires and universities).

The third model analysed those women who **intend to have three or more children**. No significant effect could be attributed to the highest level of education or to the size of the municipality in the model.

As the age of women increases they are more likely to expect to have three or more children. Once again the distinctive difference is seen between women older than 30 years and women aged 18-29. Given the construction of the dependent variable older women frequently already have more children and some of them plan to have more. On the other hand a higher tendency to prefer a two-child family (no larger) was proved among younger women.

The odds of planning more than two children are higher for married women than for single women and there are no significant differences with women who have a partner (either cohabiting or not – LAT) but are unmarried. In terms of socio-economic status, women on maternity and parental leave revealed significantly higher preferences for having three or more children.

A clear influence on the desire to have more than two children can be attributed to socio-cultural factors. The impact of religious affiliation is significant in terms of preferences and corresponds to the results of a previous study focusing on the determinants of having a third child (Pikálková 2003). The different norms and value structure associated with religious belief play an important role in reproductive plans resulting in a higher preference for a larger family (three or more children) than has the reference category of women who do not attend religious services. The differing norms, social ties and deeper social networks of larger families were detected as factors behind the transfer of higher preferences for a larger family among women who were brought up with two or more siblings. The odds of having more than two children increase with the increasing number of siblings a woman has.

In all three models, the influence of basic socio-demographic characteristics and their role in terms of reproductive preferences was analyzed. Those women who are more likely to have one, two or three or more children have been described in this chapter. Finally, there will be a discussion of the role of certain childbearing preference characteristics.

Age, both absolute and in terms of its representing different generations of women in the models, is a key variable in fertility studies and in the analysis of changing fertility patterns. Though mean expected family size was slightly lower in younger age groups, fertility preferences among women who intend to become a mother (or are already mothers; women planning to stay childless were omitted from the analysis) do not prove the higher tendency to plan only one child. The declining expected number of children could be attributed principally to a declining proportion of women who intend to have three or more children among younger

women. With decreasing age, intentions to have three and more children decreases and the intention to have two children strengthens since comparatively greater emphasis on the two-child family was found among younger generations of women. Women aged 30-40 more often plan (or already have) more than 2 children, as the same time women over 35 years more often intend to have only one child, which could be closely linked to their current life stage since mothers of one child could abandon their reproduction plans more often at that age.

Interestingly, level of **education** does not play a significant role in terms of preferences to have one child, two children or more than two children. The two-child model reveals the only exception since secondary educated women without school leaving exam are the only group with higher odds of planning family with two children. However, in general, higher education does not increase the chances of planning to have only one child and does not decrease the odds of wanting to have a large family (more than two children). Therefore it has not been proved thus far that highly-educated women in the Czech Republic intend to have fewer children, neither was this proved for women who do not intend to remain childless, at least in terms of their aspirations. In reality, however, structural barriers could contribute to both increasing the proportion of women remaining childless and to reducing the real number of children born to highly-educated women. Women with university degrees in the Czech Republic are postponing conception to older age and feel that structural barriers in the labour market and limited opportunities for attaining the right work-life balance represent a high opportunity cost.

The author's analysis of the factors that may influence the expected numbers of children revealed a number of structural effects behind real (or planned) behaviour. In particular, the family ties and social network experienced during childhood in large families create a climate that supports plans for having a higher number of children. Regression analysis shows that women who have no **siblings** have a higher chance of planning only one child than women who grew up with siblings and women with siblings have a significantly higher chance of planning a larger number of children. These results show that certain family patterns and social norms tend to reproduce socially.

The impact of **religious affiliation** is significant in terms of preferences for more children. The norms and value structure associated with religious belief play an important role in terms of preferences for having a larger family (three or more children).

The author has shown that the **place of residence** has an influence on plans regarding number of children. Living in large towns tends to have a negative influence on the decision to have two children and supports the decision to have only one child.

The influence of the **socio-economic status** of a woman was also detected. Women still in education place the greatest emphasis on the two-child family model with odds of the intention to have two children of 2.14 times higher than employed women. The opposite effect is evident for women taking maternity/parental leave and unemployed women. These groups exhibit lower odds of planning two children than those in education but still significantly higher odds of having more than two children than employed women.

The final variable shown to have a statistically significant effect on the expected number of children is **partnership status,** particularly being married rather than not. Married women are 59% less likely to plan just one child than single women. On the other hand, married women are more likely to plan two (37% more likely) and three or more (57% more likely) children than women with no partner. Women with a partner (either cohabiting or not – LAT) but unmarried do not differ statistically in their reproductive plans from women with no partner. Therefore the simple fact of being legally married reduces the odds of planning a small family and increases the odds of having at least two children. Thus the legitimization of a relationship through marriage seems to be an important factor in reducing the level of uncertainty concerning family size with only married women planning to have (or having already) a larger family.

The question is to what extent reproductive plans and childbearing intentions differ from the actual realisation thereof and if the planned number of children is in fact fulfilled. This topic is analysed in chapter 8. In the following pages the author intends to shift the focus from the question of the fertility quantum (intended number of children) to the question of fertility tempo (the timing of childbearing) and, finally, the two-child family ideal will be analysed in greater detail.

7.4 Ideal age for having a child and age norms in Czech society

Following the distinction between the quantum and tempo of fertility and after analysing the question of family size preferences the author devotes this chapter to the ideal time at which to have a child. In the Czech Republic both period and cohort fertility rates have shown a decline in terms of women below 25 and a corresponding recovery above the age of 25 over the last 20 years (see Chapter 5). But not only have fertility age patterns transformed profoundly; the notion of the ideal age at which to start a family has also changed. The perceived ideal age for first childbearing has undergone a redefinition over the past few years, particularly concerning the ideal age for the woman. Surveys confirm the general tendency to shift the ideal age at first birth towards a higher age (Šalamounová, Šamanová 2003, Šťastná 2007a); a higher age for entry into parenthood is preferred particularly by men and highly-educated people.

While in 2004 half the population over 15 years believed that a woman should have a first child before her 25th birthday, the latest results (year 2009) show that the same preferred age limit is shared by only about a third of respondents. The ideal age for entering into motherhood is considered to be between 25 and 29 years (half of respondents). One third of respondents consider the ideal age to be below 25 and less than 8 per cent above 30. The modal age (the most common response) is lower for women than for men with 29 per cent of respondents believing that the ideal age of the mother is exactly 25 years (Šamanová 2010).

In the case of the ideal age for men to become a father almost 50 per cent of respondents continue to declare an age of from 25 to 29 years however increasingly preferences are being detected for 30 years and above. An age of above 29 years is considered ideal for men by more than one third of respondents while younger than 25 years is seen as an appropriate age to begin

parenthood by only 7 per cent of respondents. The most commonly suggested age for paternity is 30 years (29 per cent of respondents) (Šamanová 2010).

A shift in the perception of the ideal age for childbearing is also significant among young childless people. In 2006 the ideal age for the first child was about 28 years for women and 29-30 years for men and the ideal age for the birth of the last child ranged between 32 to 33 years for women and 34 to 35 years for men (year 2006, RZV survey).

Normative views on the age of transition to parenthood and the age of having subsequent children thus both reflect and are reflected in fertility age patterns. Recent studies show that changing social norms in some countries of the CEE region and age norms connected with the transition to motherhood in particular play an important role in fertility timing changes (Mynarska 2007, Perelli-Harris 2005, Potančoková 2009, Bartošová 2007, Hašková, Zamykalová 2006). Social clocks or normative timetables refer to expectations of the appropriate age and timing of important life transitions. Elder Jr. et al. (2003: 6) stress that this line of aging research has helped to demonstrate the enormous diversity of people's lives and also how norms give meaning to, and even direct, individual trajectories.

Age norms can be divided into two major groups: formal and informal norms. Usually, formal age norms are codified in legislation. Society is divided into different age groups and access to the rights and obligations of individuals is regulated by these norms (e.g. the legal age of majority, minimal legal age for first intercourse when talking about reproduction). Informal age norms are embedded in the culture of society and they constitute more or less generally accepted rules which affect, as do formal age norms, individual behaviour and social interaction.

Age norms could be interpreted as age deadlines that define life stages and the timing of life transitions in terms of chronological time (Potančoková 2009). According to sociological theory three important features of the concept of norms have to be considered. These represent ways in which age norms are operationalized (Vidovićová, Gregorová 2008). Firstly, norms can be derived from statistical norms, i.e. from the statistical regularity of behaviour. Hence, in the case of age norms one can identify statistical regularities in the timing of relevant life events (Vidovićová, Gregorová 2008). According to some authors, the preferred age for an event transition and the modal age of the transition coincide (e.g. Modell 1990 and Rindfuss and Bumpass 1978 cit from Potančoková 2009:138). Secondly, age norms are operationalized as an optimum and collective consensus about the best time for individual live events and transitions. This consensus refers to both general rules and their application in real behaviour but without the necessity of social sanctions and rewards. Thirdly, age norms can acquire the character of rules "one should" follow. These rules are formed through the mechanisms of social control and supported by general consensus. Moreover, in order to point out such a social norm, mechanisms of social control should be identified. These mechanisms often work through positive enforcement when compliant and negative sanctions in case of deviance.

The concept of norms is frequently employed in studies of the decision-making process and provides a useful insight into human behaviour. In a societal context, where the timing of life-

course events changes substantially, particularly the timing of partnership formation and family building, age norms relevant to delaying motherhood are studied. Several studies provide a discussion on the concepts of early, optimal and late childbearing and on relevant age deadlines in contemporary Czech society (e.g. Bartošová 2007, Hašková, Zamykalová 2006, Hašková 2009).

The optimal time for entry into motherhood often derives from the approximate timing of completing other life transitions relevant to childbearing (Potančoková 2009), namely the completing of education, the end of dependency on others, gaining a job or professional status and financial and housing security. Therefore the definition of the optimal time for childbearing based merely on chronological age cannot be universal for all social groups. The shift to higher age norms declared by more highly educated women is thus linked to the complex of changes in the labour market, in the sequencing of stages in the life course and their number and possibly to the emergence of the post-adolescence phase which is, by some authors (Bartošová 2007), defined as a separate life phase that has some traits attributed to adulthood but in which other traits typical of the adult life course (such as childbearing) are still lacking. In addition, concerning age, the sequence of certain types of roles and transitions could be seen as normative since those roles, their order and timing are presented as logical and natural (Vidovićová, Gregorová 2008).

What is important for the concept of age norms is that, as for other social norms, one should be able to identify sanctions or indirect means of social pressure which are applied if the normative rule is not followed[36]. Social norms are often concerned with "should" and there is a certain amount of pressure applied to the individual to conform his/her behaviour to the given norm; however a certain degree of leeway is permitted.

Various types of normative pressure connected with becoming parents and with the idea of how many children to have can be observed at an interpersonal level. It may be that one partner in the couple wants a child. Or it happens that from a certain age parents often long for grandchildren. As people grow older, more and more of their friends and acquaintances become parents, and consequently, a person finds him/herself confronted with the decision of whether to take part in the "family-style" social activities of their peers or to re-direct themselves into the ranks of other peers who are childless.

Social pressure concerning the issue of reproduction and fertility plans is reported by Czech women. Respondents of a certain age and family situation report social expectations of their significant others and indirectly speak about social pressure in questions asking about their parents', relatives' and friends' thinking about the issue of reproductive plans - whether the respondent should or should not have a child. Although these questions measure principally the perception of others' opinions rather than the actual existence of the social pressure or its magnitude, such factors are important. In their answers it is not particularly important whether

[36] In sociological theory social norms could be characterised as the rules and regulations that a group uses for appropriate and inappropriate behaviour, attitudes or values. Violation of the norms can result in different kinds of sanctions.

relatives and friends indeed share these expectations. What is important is that respondents themselves think that these general norms concerning themselves exist in their social environment and that they could, at a certain age, possibly be aware of certain social pressure related to their reproductive behaviour and family and life transitions. This reflection of the opinions of other people who, in many cases, fill the role of significant others, could help to identify ways in which those norms in society which are applied to an individual differently at different ages are structured according to individual situations.

From a certain age women become aware of normative pressure; more than half of childless women aged 25-34 are aware that their parents think they should have a child. Every fifth childless woman indicated that they strongly agree with the statement that their parents think they should have a child (Table 7.4). In relation to the opinions of other relatives and friends[37] the situation is similar, and almost half of the women questioned indicated that their relatives and friends think they should have a child.

Numerous qualitative surveys support these findings. Social pressure to make a decision to have a child as a stream of direct pressure is frequently detected from close family members (Hašková, Zamykalová 2006 for Czech childless women, Potančoková 2009 for Slovak urban women from Bratislava, Mynarska 2007 for Polish men and women from Warsaw). This pressure often comes mainly from female family members - either mothers or mothers-in-law and can become strong if the parents of one of the partners consider themselves to be at an appropriate age for becoming grandparents, especially when they do not yet have grandchildren (Potančoková 2009: 148).

The situation is no different even among women aged 25-34 years who already have one child. The two-child model is so deeply rooted in Czech society that a half of women with one child indicated that not just their parents but even their friends and relatives felt that they should have a second child. The very opposite situation is observed among women with two or more children, the majority of whom answered that no-one in their social environment thought that they should have another child.

[37] Besides pressure from the family, respondents of qualitative surveys also point out the pressure of the broader community such as friends, peers or church when it concerns the topic of their maternity role and the timing of parenthood (Hašková, Zamykalová 2006).

Table 7.4 Opinions of others on whether the respondent should have a/another child, women aged 25-34 (%)

Number of children	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	*N*
	Your parents think that you should have a/another child.					
0	19.9	36.4	26.7	12.3	4.7	*236*
1	13.5	38.2	27.5	13.9	6.8	*251*
2+	-	5.4	28.4	34.7	31.5	*317*
	Most of your relatives think that you should have a/another child.					
0	13.2	35.3	28.5	16.6	6.4	*235*
1	13.5	35.9	27.8	15.4	7.3	*259*
2+	0.3	4.4	27.5	35.6	32.2	*320*
	Most of your friends think that you should have a/another child.					
0	15.8	32.9	32.1	13.2	6.0	*234*
1	13.8	36.9	31.2	11.9	6.2	*260*
2+	2.2	7.1	30.7	33.5	26.4	*322*

Note: women aged 25-34, sample weighted for the population.
Source: GGS Czech Republic 2005

The rise in the mean age at which women gave birth in the past decade and the resultant postponement of the start of the stage of parenthood in life add to the fact that women below 25 do not face as much pressure from their social environment as they once did. According to two-thirds (60%-65%) of childless women aged below 25, their parents, relatives, and friends do not think that they should currently have a child. A further roughly one-quarter neither agrees nor disagrees with the statement. Interestingly, among women who already have one child, almost one-half also do not believe that those around them think they should have another child.

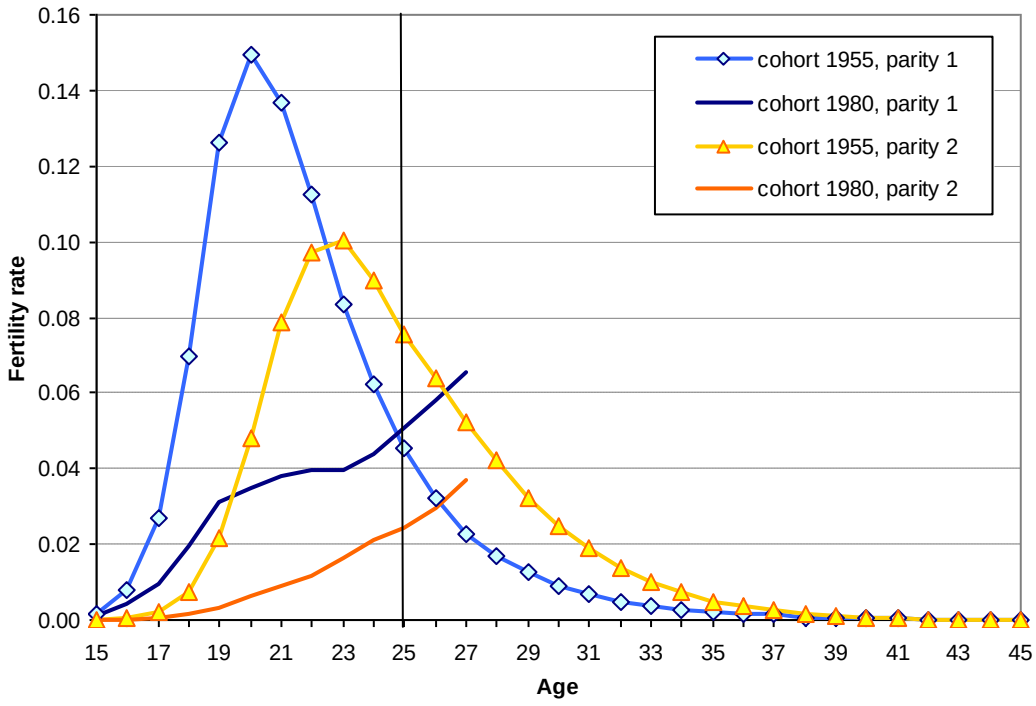
The situation is very similar among men, especially younger men. Among men in the 25-34 age group – and more so than among women – the response of their social environment depends on their real life situation and specifically on how many children they have. Childless men more often than childless women of the same age indicated that no one around them thinks they should have a child (approximately 10 percentage points more than women). Either they are not exposed to the same amount of pressure or they do not perceive it to the same degree. Given the current age differences between partners and given that men tend to be older than women when they start a family, it might be expected that men would be exposed to more pressure when they are older (even after the age of 34), however this was not observed. Nevertheless, as soon as a man has at least one child, they experience the same response from those around them as women of the same age with a child (children).

It is necessary to return to younger generations of women aged below 25 to compare how norms concerning the proper age for entering the motherhood life phase have shifted from the intergenerational perspective. It was shown that the vast majority of women aged below 25 disagree that their parents might think that they should currently have a child and this holds true

also among women who already have one child. It is possible to compare women in the post-adolescence stage of the life-course[38] with their mothers' generations.

Figure 7.3 compares the age specific fertility rate of a generation of daughters and their mothers' generation. The daughter generation is represented by women born in 1980 (thus attaining the age of 25 in the year of the interview). The mean age at birth was 24.7 in 1980 (the year in which the daughters were born) therefore the generation of 1955 was plotted to represent the generation of mothers. Figure 7.3 shows that at the age of 25, the mothers' generation had already passed the peak of their fertility with the maximum intensity for both the first and second deliveries concentrated at younger ages. It can be said, however simplifying, that generations of daughters today are commencing the childbearing phase at an age at which their mothers were completing the building of a family (since the two-child family was most common).

Figure 7.3 Cohort fertility rates, birth order 1 and 2, Czech Republic 2007



Source: Human Fertility Database

This shift in age norms in the statistical sense has its social meaning. Even though we do not have the direct declarations of respondents' relatives and family members to confirm or disprove the opinions offered by respondents (table 7.4), other relevant data is available from sociological surveys showing that generations who themselves experienced early entry into parenthood express different age norms for their children (e.g. Chaloupková (2008) shows that

[38] This classification could be seen as somewhat simplistic. However, the key feature characterising this new phase of the life course, i.e. childbearing (a trait typical of the adult life course which has still not been experienced by the majority of women of this age) is used for intergenerational comparison purposes.

the generations born between 1947 and 1970 declared the ideal age at first birth to be between 24 and 25.3 years for women.

The results of qualitative investigation confirms the statistical regularity when they illustrate that opinions on appropriate and deviant behaviour at a certain age and on the optimal timing of entry into motherhood differ across cohorts. For one cohort it is a sort of statistical and cultural norm to have the first child around the age of twenty. However, other birth cohorts, although influenced by a key socio-economic change which has serious implications for the culture and socio-demographic climate, does not lose this norm and neither does the norm become more flexible but is "merely" postponed to a later age (Vidovićová, Gregorová 2007). This means that the timing of having children is not irrelevant, it just becomes non-standard if someone has children "too soon".

To conclude, age norms are not universal and vary across time periods and societies. Some authors (e.g. Marini 1984 cf. Havlíková 2007) call for caution when using age norms for explaining human behaviour. Age norms cannot explain the emergence and transformation of certain life-event timing patterns within the whole of the population since age norms reflect primarily patterns of behaviour that must be explained. They admit, however, that at the individual level age norms have a certain determining influence, but they are not the only factor. Social expectations with regard to the age of individual still form a benchmark or milestones for plans and aspirations that people wish to play out at various stages in their lives (Heinz, Krüger 2007).

7.5 Children and the value orientation associated with them[39]

Discussions about the "value of children" and parenthood can be found in Hoffman & Hoffman (1973), who introduced this term into sociologically and psychologically oriented fertility studies. In an attempt to explain cultural differences in family behaviour and planning (focusing primarily on fertility), they developed a model that concentrates on the psychological context of parenthood. They saw a key intervening parameter in the "value of children" that determines the result of decision-making concerning children and that depends on socio-demographic and socio-economic determiners. Examining the actual content of the term "value of children", they listed nine basic values that a child provides to its parents: (1) adult status and social identity; (2) expansion of the self, giving the feeling of reproducing oneself alone, "immortality"; (3) morality – the parent surrenders his/her own interests for the well-being of a new person; (4) primary group ties, feeling of affiliation; (5) source of stimulation, novelty in life, fun; (6) feeling of achievement, competence and creativity; (7) power, influence; (8) social comparison and competition; (9) economic utility (Hoffman, Hoffman 1973).

[39] Chapters 7.5 and 7.6 are based on the author's article „Druhé dítě v rodině - preference a hodnotové orientace českých žen" (A Second Child in the Family - The Preferences and Values of Czech Women) published in *Sociologický časopis/Czech Sociological Review* 43(4): 281-303.

The importance of this approach rests in the fact that if we want to predict fertility trends, we need to understand what motivation factors lie behind the desire for children (Hoffman 1975). It is important to understand underlying motivations and to analyze them in relation to other social conditions.

Based on Hoffmanns' work, Fawcet and Arnold developed a method for measuring the values associated with children with the Value of Children model with which they proposed to seek both the motivation for procreation in general and the motivation for having a specific number of children, in an attempt to arrive at a better understanding of population growth or decline (Rabušic 2001a: 155). The results of the subsequent empirical study revealed that the value of children is associated primarily with the emotions arising from the bonds within the primary group, with the sources of stimulation and fun that children provide and with the opportunity for the individual to expand beyond the limits of his or her own life (ibid.). A further approach addressing the value of children is based on extending the rational choice theory to the phenomenon of a reduction in the uncertainty in the life of the individual (Friedman, Hechter, Kanazawa 1994). Reducing uncertainty is always an objective of the individual; he/she considers that effort to be a universal immanent value. Thus for the individual, parenthood, i.e. children, represents one possible strategy for promoting that objective, as do marital bonds and a stable occupational career. In the Czech Republic, this theory was proved by Vašková (2006) in her study of pregnancy among adolescent girls.

Research focusing on family behaviour confirms the persisting high position of children in the value systems of Czech men and women (e.g. "Young Generation 1997" survey). In order to improve understanding about the factors determining partner and family relationships and decision-making, the GGS contained a battery of statements concerning selected aspects of life. Due to the focus of this chapter, the author will consider only those questions that are relevant to the values associated with children, and primarily to assessing the determining factors that women consider when deciding whether or not to bear a child. Factor analysis was the primary method used. The population studied consisted of women aged 18-49 (N = 2 970); in the analysis focusing on a second child, the selected sample consisted of women aged 25-39 who already had one child (N = 367).

In the first step, three factors were extracted from the battery of statements concerning family life. These statements related primarily to the partnership, family arrangements and children (Table 7.5). The factor "children", which was the focus of a separate, more detailed analysis, consisted of items concerning the value of children in the lives of women and men and the family ties provided to the child. The second factor "individualism and partnership plurality," related to questions regarding types of partnership structures; individualism is represented by questions about single motherhood and the independence of children in early adulthood. The third factor covers questions on the indissoluble nature of marriage and tolerance of divorce.

Table 7.5 Factor analysis

Statements	Factor		
	Children	Individualism and partnership plurality	Tolerance to divorce
A woman has to have children in order to be fulfilled.	*0.844*	0.004	0.095
A man has to have children in order to be fulfilled.	*0.839*	-0.016	-0.055
A child needs a home with both a father and a mother to grow up happily.	*0.573*	-0.078	-0.314
Marriage is an outdated institution.	-0.319	*0.518*	0.044
It is all right for an unmarried couple to live together even if they have no interest in marriage.	-0.072	*0.594*	0.353
A woman can have a child as a single parent even if she doesn't want to have a stable relationship with a man.	0.139	*0.622*	0.346
When child turn about 18-20 years old they should start to live independently.	0.072	*0.676*	-0.342
Marriage is a lifetime relationship and should never be ended.	0.313	0.004	*-0.650*
It is all right for a couple with an unhappy marriage to get a divorce even if they have children.	0.091	0.164	*0.751*
% of variance	*22.0*	*16.6*	*16.2*

Method used: Principal Component Analysis, rotation method: Varimax with Kaiser Normalization, KMO = 0.654.

Notes: scale of agreement with statements given: 1 (I strongly agree.) – 5 (I strongly disagree.)

Source: GGS Czech Republic 2005, women aged 18-49.

In addition to general factors covering value orientations towards family life, the author extracted factors that influence the decision of whether to have additional children. Those factors, combined with the "children" factor, were further analysed in more detail with respect to the socio-demographic characteristics of the female respondents.

To assess the determining factors that women consider when deciding whether or not to have a child in the near future[40], the author selected a battery of questions that used a scale assessing the level of importance from 1 ("not at all") to 4 ("a great deal"). The items focused mainly on two areas labelled "living conditions" and "partner". The first included the conditionality of the financial situation, employment and housing conditions, as well as health and the availability of early childcare, whether in the form of institutional care or maternal care during the early life of the child. The second area covered the conditionality of the partner's health and employment, as well as the individual aspect of partnership with the "right" man. Factor analysis confirmed this division (Table 7.6).

[40] In the near future, here, means within three years, i.e. within the horizon of the planned second wave of the survey. The question: "How much would the decision on whether to have or not to have a/another child during the next three years depend on the following?"

Table 7.6 Factor analysis – decision about childbearing

How much would your decision depend on:	**Factor**	
	Living conditions	Partner
your financial situation	*0.855*	0.353
your work	*0.725*	0.321
your housing conditions	*0.835*	0.341
your health	*0.817*	0.388
availability of childcare	*0.805*	0.374
your opportunity to go on maternity leave	*0.818*	0.334
you having a suitable partner	0.534	*0.621*
your partner's/spouse's work	0.325	*0.897*
your partner's/spouse's health	0.367	*0.882*
% of variance	*49.6*	*30.1*

Method used: Principal Component Analysis; Rotation method: Varimax with Kaiser Normalization, KMO = 0.915.

Notes: scale, to what extent would the decision about childbearing depend on the items mentioned: 1 (not at all) – 5 (a great deal)

Source: GGS Czech Republic 2005, women aged 18-49.

It is now possible to focus more deeply on the differences in the preferences exhibited by various groups of women on the basis of the factors extracted[41]. Due to the focus of this chapter, the author will look closely at the factor "children" only and the two factors concerning the decision whether to have a(another) child.

The following variables were included in the analysis: age, education, actual and intended number of children, housing and whether the respondent intended to have a (another) child within the next three years. Whether or not the woman lived in one household with her partner/husband was also taken into consideration. The influence of those characteristics on value orientation and attitude to children and the conditions that are more or less important for deciding whether to have another child were tested by comparing the average factor scores for different groups of women.

An examination of general value orientations revealed that the youngest women (18-24) ascribe less importance, with respect to their personal lives, to children than do older women (Table 5, "children" factor). Women over 25 agree more strongly with the statement that both parents should care for and raise children and as well as with the statement concerning the irreplaceable quality of the emotional aspect of parenthood for individual fulfilment. In general, the younger generation emphasized the importance of the opportunity for self-fulfilment and exercising one's abilities outside of the family more frequently. From the perspective of education level, children are rated more highly as a life value among women with secondary education (with or without the school leaving exam - "*maturita*"). Post-secondary school graduates and women still in education (of which 40 per cent were already studying at post-secondary schools) showed the least degree of conformity with respect to this factor. Municipality size was also found to be a differentiating factor: the smaller the municipality in

[41] In the course of the factor analysis, factor scores were assigned to each woman in the sample under study for each of the factors. The differences between the individual socio-demographic categories selected were tested on that basis (One-Way ANOVA, t-test for dichotomous variables).

which a woman lives, the more she agrees, on average, with the values associated with children. As expected, there were differences according to the actual or total desired number of children and according to the intention to have a (another) child in the near future (Table 7.7, "children" factor); the level of agreement with the values associated with children was found to increase together with an increasing number of children (actual or desired).

Interestingly, a woman's partnership status, i.e. whether she lives with a partner/husband in a common household, is related to general values associated with children. Women who do not live with a partner tend to be less likely to agree with those values. That group encompasses both young childless women, who, in general, do not assign the same value to children that older women who have their own family do, but it also contains women who are divorced or separated from a partner. Their living conditions already conflict with the idea that a harmonious home with both parents is essential for a child's happiness.

The results of the analysis reveal differences between groups of women in respect to the importance assigned to living conditions and partners when deciding about having a (another) child (Table 7.7, factors "living conditions" and "partner"). Compared to their younger counterparts, older women assigned considerably higher importance to those factors. In this case, age corresponds to a certain degree with the living conditions of older women, who in many cases have already had the desired number of children and thus have completed their reproductive plans and do not plan to have any more children. When deciding to have another child such women would stress the importance of their living conditions and partnership even more than would women who intend to have another child whatever the circumstances.

Similarly women who do not want any children, just as those who do not plan to have children in the near future, assign greater importance and influence on the decision-making process to both factors (Table 7.7).

Turning to education, women with basic or secondary educations emphasize the importance of living conditions (Table 7.7). In contrast, post-secondary school graduates and students do not assign a comparable weight to this factor. Thus, when deciding whether or not to have a (another) child in the near future, the most highly educated women do not place as much emphasis on their financial situation or housing conditions as do less educated women whose lower levels of education are often associated with lower socio-economic status. However, one can predict that tertiary school graduates would be more likely to emphasize the professional self-fulfilment factor and the potential for combining their family and working lives in the decision-making process. These decision-making aspects were not explicitly included in the battery of questions, but it is possible to make conclusions based on previous surveys. In the Fertility and Family Survey conducted in 1997 (for information see Podrobné... 1998, Rychtaříková, Kraus 2001), post-university graduates were more likely than women with lower levels of education to report that growing desires for independence and a greater emphasis placed on professional careers constituted a very important reason for the lower number of children among younger women (compared to previous generations). In contrast, women who had not completed secondary education with the school-leaving exam at age 18/19 ("*maturita*")

were more likely to believe that whether a person could have a professional career did not depend on the number of children they had. Compared to women with a higher level of education, they were often less likely to answer the question of how many children a person could have while still being able to build a professional career. They also appeared to be less familiar with the problem of combining work and family responsibilities and they were considerably less likely to cite a low number of children (one or none) as one condition for enjoying a professional career, while secondary school graduates with the school-leaving exam at age 18/19 ("*maturita*") or university graduates tended to believe that a person who wants to build a career should refrain from having any children at that time (Šťastná 2005a).

Women who have completed only basic education and students placed the greatest emphasis on the importance of a suitable partner in terms of deciding on childbearing, including the partner's employment and health (Table 7.7). More than 90 per cent of the women still in education surveyed did not share a household with a partner, although many of them were in a stable relationship, i.e. had a partner with whom they did not share a common home. They stressed the importance of partnership stability in deciding whether to start a family. In contrast, most women with the lowest level of education (three-quarters of them) do share a household with their partner, meaning that for women of lower socio-economic status the perception of the man as the bread-winner of the family is highly important with respect to decisions about family size.

Cohabitation with a partner influences both perceptions of the importance of material security and suitable living conditions as well as, understandably, the significance assigned to the partnership itself. Women who do not have a partner do not consider the influence of living conditions to be important with respect to making decisions about children; they place considerably more emphasis on the necessity of a suitable father for the children. The decisions of women living with partners are thus influenced primarily by financial/material and work conditions.

Table 7.7 Average values of factor scores

	Factor		
	Children	Living conditions	Partner
Age	***	***	***
18–24	0.255	-0.155	-0.018
25–34	-0.050	-0.108	-0.123
35–49	-0.054	0.136	0.097
Education	***	*	***
Basic	0.059	0.086	0.305
Secondary	-0.120	0.021	-0.048
Secondary (school-leaving exam at age 18 /19)	-0.046	0.027	-0.039
Tertiary	0.129	-0.093	-0.055
In education	0.338	-0.142	0.025
Number of children	***	***	-
0	0.258	-0.145	0.001
1	0.014	-0.060	-0.031
2	-0.209	0.110	-0.002
3 and more	-0.072	0.091	0.064
Expected number of children	***	**	**
0	0.525	0.278	0.240
1	0.193	-0.039	0.065
2	-0.105	-0.016	-0.009
3 and more	-0.029	-0.019	-0.077
(Next) child during the next 3 years	*	***	***
Yes	-0.082	-0.182	-0.172
No	0.037	0.054	0.063
Woman lives with her partner	***	***	***
Yes	-0.156	0.078	-0.147
No	0.322	-0.161	0.301
Municipality size	***	-	-
- 1 999 inhabitants	-0.199	0.018	0.084
2 000 – 19 999 inhabitants	-0.064	0.003	-0.056
20 000 – 99 999 inhabitants	0.044	0.051	0.051
100 000 and more inhabitants	0.236	-0.092	-0.025

Notes: (1) * p< 0.05, ** p< 0.01, *** p< 0.001 (One-Way ANOVA, t-test)
(2) Scores based on two factor analyses presented in table 7.5 and 7.6. The lower the value of the average factor scores of individual factors, the more respondents considered children to be a necessary factor in the fulfilment of the lives of the parents and assigned importance to a harmonious household (in the "children" factor); less importance was assigned to the role played by objective living conditions and the situation of the partner (in the factors "living conditions" and "partner") in deciding about having additional children.
(3) Educational level is characterised as follows: "basic" (uncompleted or basic education only, compulsory education (8 / 9 years)), "secondary" (apprenticeship or secondary education without the school-seaving exam), "secondary (school-leaving exam)" (completed upper-secondary education with the school-leaving exam including follow-up courses) and "tertiary" (higher technical colleges including conservatoires and universities).

Source: GGS Czech Republic 2005, women aged 18-49, weighted sample

7.6 A second child in the family – restriction or enrichment of life?

In order to confirm or refute differences with respect to value orientations and perceptions of the importance of individual aspects and conditions for deciding whether to have a second child for women who are the mothers of one child, a similar detailed analysis of the given factors was performed for this group of women. The sample consisted of women who already had one biological child; they had no step-, adopted or foster children in the household, they were not pregnant at the time of the interview and it was physically possible for them to have another baby. Since mothers with one child made up only a small number in the youngest age group (8 per cent of women younger than 25 years), analysis focused on women aged 25-39 years, for whom the possibility of an additional child was realistic with respect to age and who were also often planning to have a child (or children)[42]. Two factor analyses were performed on the same battery of questions for this group of women and factors[43] were extracted from the results which corresponded to the factors described for the group of women that did not take the number of children into account.

In terms of the "children" factor, it is possible to see a certain difference between the group of mothers with one child and the total female population in the survey sample. There is no difference according to level of education, however a different age pattern does emerge – the oldest women with one child agree less frequently with statements concerning this factor than do younger mothers (Table 7.8). More than three quarters of such women do not want another child; hence their attitude corresponds to a certain degree with the attitude of all women who do not plan to have a second child within the next three years and who intend to have only one child in total. These women are also more reserved in their level of agreement with values associated with children compared to mothers who are planning another child.

Compared to all women regardless of how many children they have, the author did not detect an important difference between how distinctive groups of women with one child assess the importance of objective living conditions and partner in making decisions about a second child (Table 7.8). The only differences that could be found were among women who do not want another child either in the near future or at a later date. Such women assign greater importance to the partner factor than do the other groups, which is not surprising since it is that group which was least likely to be living with a partner at the time of the interview (38 per cent versus 16 per cent of women who plan to have another child).

[42] Half of the women in the 25-39 age group plan to have a second child in the next three years, within that group there are age-related differences; 67 per cent of the mothers in the 25-34 age group plan another child, while just under one quarter of those in the 35-39 age group do so.

[43] The results of factor analysis on the group of women aged 25-39 with one child are not shown, the three general factors "children", "individualism and partnership plurality" and "tolerance to divorce" were also extracted from the battery of value statements for that group (KMO = 0.625, percentage of overall variance accounted for = 58%) and then two factors "living conditions" and "partner" were extracted on the basis of the questions concerning conditions necessary for making decisions about an additional pregnancy (KMO = 0.871, percentage of overall variance accounted for = 69%). Below the author will analyze and report only differences that are tied to the socio-demographic characteristics of that group of women and based on a comparison of factor scores.

Table 7.8 Average values of factor scores, women with one child

	Factor		
	Children	Living conditions	Partner
Age	***	-	-
25–29	-0.204	0.056	-0.127
30–34	-0.032	0.013	0.031
35–39	0.366	-0.118	0.162
Education	-	-	-
Basic or secondary	-0.029	0.052	0.070
Secondary (school-leaving exam at age 18 /19)	0.043	-0.052	-0.028
Tertiary	-0.016	0.017	-0.091
Expected number of children	**	-	***
1	0.268	0.084	0.344
2	-0.109	-0.042	-0.180
3 and more	-0.207	-0.067	-0.234
Second child during the next 3 years	***	-	***
Yes	-0.237	-0.044	-0.215
No	0.225	0.045	0.220
Woman lives with her partner	***	-	***
Yes	-0.127	0.005	-0.212
No	0.342	-0.014	0.575
Municipality size	*	-	-
- 1 999 inhabitants	0.055	0.198	-0.254
2 000 – 19 999 inhabitants	-0.132	0.027	0.095
20 000 – 99 999 inhabitants	0.007	-0.098	0.042
100 000 and more inhabitants	0.274	-0.037	-0.159

Notes: (1) * p< 0.05, ** p< 0.01, *** p< 0.001 (One-Way ANOVA, t-test).
(2) The lower the value of the average factor scores of individual factors, the more respondents considered children to be a necessary value for the fulfilment of the lives of the parents and assigned importance to a harmonious household (in the "children" factor) and the less importance was assigned to the role played by objective living conditions and the situation of the partner (in the factor "living conditions" and "partner" in deciding about additional children).
(3) Educational level is characterised as follows: "basic" (uncompleted or basic education only, compulsory education (8 / 9 years)), "secondary" (apprenticeship or secondary education without the school-leaving exam), "secondary (school-leaving exam)" (completed upper-secondary education with the school-leaving exam including follow-up courses) and "tertiary" (higher technical colleges including conservatoires and universities).

Source: GGS Czech Republic 2005, women aged 25-39 who have one biological child, are not pregnant and are capable of childbearing; weighted sample.

There was no difference based on educational level among the women in any of the factors listed (Table 7.8). Thus, one could say that once women become mothers, family and parenthood have an indispensable place in their opinions and values and that selected socio-demographic characteristics do not play a markedly differentiating role in that respect. In terms of values orientation, the phase of life in which the woman finds herself (including the aspect of whether or not she is living with a partner) and her life plans concerning family size are the determining factors.

Whether or not women want a second child, they can assess what impact an additional child in the family would have on various aspects of their lives according to their current situation and personal experience with motherhood. The author assumes that the experience associated

with bearing and raising a first child provides a better idea of the challenges involved in caring for a child and the impact they have on the occupational and extra-occupational domains, as well as on social contact and interpersonal relationships. In examining expectations about the influence that having a second child has on the life of the mother, the study looked only at women living with a child aged 14 or less. This enabled the author to avoid including cases where the age gap between children (the first child, actually living with the woman, and the second, hypothetical child) was too large, and the author also excluded women who had had a child at a very young age and that were already adult or nearly adult – such women would be in a situation similar to that of the mothers of only one child with respect to childcare demands, since the older child would be fairly independent by that time and would not require as much care and/or would require a different type of care than is the case in a family where both children are younger.

In the group so defined it is by no means surprising that it is primarily younger women (67 per cent of the 25-29 age group) and women living with a partner (61 per cent) who planned to have a child in the near future. However, no statistically significant differences according to the level of education were proved.

When considering how bearing a second child would influence various aspects of their lives, women who were actually planning to have another child assessed the changes in all aspects considerably more positively than did women not planning to have another child (Table 7.9). Women expected a second child to have a positive impact primarily on their private lives, whether by that they meant joy and satisfaction in life and/or the partnership or a feeling of security which is closely associated with the idea that the children will care for their parents in their old age. A further area with whose improvement a second child was associated was the individual's social bonds, both within the family structure (relationship between the woman and her parents) and within the framework of wider social ties (what people around her think of her). The impact of a second child on the intimate relationships of the respondents and on the professional lives of the partners was assigned a mid-range value, i.e. an impact neither for the better nor for the worse from a qualitative standpoint. Partners' professional lives are not seen to be influenced by children in the family because the traditional division of gender roles within the family continues to prevail, and more than two thirds of the parents of young children, i.e. those whose professional activity would have been influenced by another child in the family, expressed agreement with the statement that the man should earn the money and the woman should take care of the home and the family (Ettlerová, Šťastná 2006). Thus it is the woman who takes on the main responsibility for caring for the child, especially at a young age. Although she does not see this as having an impact on her partner's employment, she is well aware of the negative impact it will have on her own professional life. Women who plan to have a second child identify that area as one of three domains in which another child will have a more negative impact: their financial situation, working life and personal independence (the possibility to do what she wants).

When evaluating the impact of a hypothetical second child, mothers of one child who do not want to have another (at least within the next three years; though most of them do not plan to

have another child at all), tended to give more negative ratings in all the aspects listed, although the sequence of the individual items remained constant. They envisaged a negative impact on the professional life of their partners as well as on the opinions of people around them. Nor did they expect the child to have a very positive impact on their own feeling of security in life and on feelings of security in old age: none of those aspects would be influenced in their opinion (either for the better or for the worse).

Further, the author compared different age groups of mothers. In this context it is important to remember that different age groups correspond, to a certain degree, with whether or not women want another child. The youngest category encompasses a greater proportion of women who plan or at least hope to have another child; the oldest of the age groups contains a greater proportion of women who do not want to have second child (Table 7.9).

Even with regard to these attitude-related questions, the influence of education cannot be detected. Moreover, the level of education attained is not reflected in the attitude of groups of women of the same age who are still childless or who want to have a second child. Thus, at a certain stage of life, women, whatever their level of education, are very similar in their opinions and assessments of the impact of a (another) child. The differences that do exist are associated more with the specific phases of the family cycle of the woman (in most of the domains opinions vary considerably according to the number of children) and with maternal aspirations for the future, i.e. whether or not they hope to have a child in the near future.

Table 7.9 Effect that a second child would have on various aspects of life

Influence on:	**Having next child within 3 years**		**Age**			**Total**
	yes	no***	25–29	30–34	35–39	
the joy and satisfaction you get from life	1.8	2.6	2.0	2.1	2.6***	2.2
the closeness between partners/spouses	2.3	2.8	2.5	2.4	2.9**	2.5
certainty in your life	2.4	2.8	2.6	2.5	2.8	2.6
the care and security you may get in old age	2.5	2.8	2.6	2.5	3.0**	2.6
the closeness between you and your parents	2.6	3.0	2.7	2.7	2.9	2.8
what people around you think of you	2.8	3.1	2.8	3.0	3.0	2.9
sex life	2.9	3.1	3.0	3.0	3.1	3.0
partner's/spouse's employment opportunities	3.0	3.3	3.0	3.1	3.3*	3.1
the possibility to do what you want	3.5	4.0	3.6*	3.8	4.0	3.7
employment opportunities of respondent	3.6	4.0	3.6**	3.9	4.0	3.8
financial situation	3.7	4.2	3.8*	4.0	4.1	3.9

Notes: * p< 0.05, ** p< 0.01, *** p< 0.001 (One-Way ANOVA, t-test). Average values from a scale from (much better) to 5 (much worse) in response to the question: "If you were to have a child in the next three years, would it be better or worse for…."

Source: GGS Czech Republic 2005, women aged 25-39 in households with one biological child aged 14 or below, weighted sample.

7.7 Conclusion

This chapter has looked at general values associated with children and primarily at selected factors associated with making decisions about having a second child, including the conditions women take into consideration when deciding whether to have another child.

Despite the persistent low fertility level, opinions in the Czech population regarding the ideal number of children in a family have remained relatively consistent. The GGS 2005 confirmed the prevalence of the ideal two-child family model. It also confirmed the long-term trend away from families with more children, which has already been documented in various analyses of cohort fertility. However, the important feature in terms of fertility plans detected in the youngest generation was that the average number of children planned falls below the replacement level: on average, women aged 25 or below, i.e. those born in the 1980s want fewer children than the replacement level for the population. A greater proportion of women in those generations also say that they do not want any children.

Though the mean expected family size was slightly lower in younger age groups, fertility preferences among women who intend to become a mother (or are already mothers; women intending to remain childless were omitted from the analysis) do not prove a higher tendency to plan only one child. The declining expected number of children could be attributed primarily to the declining proportion of women who intend to have three or more children among younger women.

An analysis of the factors that may affect childbearing preferences regarding number of children showed that some of the sociological findings on the influence of the structure on real behaviour are valid. In particular, the type of family ties and social network experienced during childhood in a large family was found to create a climate that supports plans for a higher number of children. Further important factors affecting preferences for a larger family consist of religious affiliation and the role of the local community, i.e. living in large towns strengthens the decision to have only one child. A further important place in childbearing preferences is occupied by the partnership status and marriage; only married women differed significantly in their fertility plans from other women in that they are less likely to plan one child; conversely they are more likely to plan to have two, three or more children.

Interestingly, a higher level of education does not increase the chances of planning to have only one child and does not decrease the odds of wanting to have a large family (more than two children) when controlling for other important personal characteristics.

The youngest women ascribe less importance to children with respect to their personal lives; in contrast, older women tend to evaluate highly the need for childcare and child-raising on the part of both parents and emphasize the indispensable quality of the emotional aspect that parenthood provides to individual fulfilment. With regard to educational level, secondary school graduates in particular perceived children as an important value. In contrast, there are no major differences between women with one child according to level of education although an age

pattern was detected – older women with one child exhibit a lower degree of agreement with statements concerning the value of children.

When deciding whether to have a (another) children, women evaluate differently the importance of living conditions and their partners. Unlike women who have received tertiary education and women who are still studying, women with basic or secondary educations emphasize the importance of living conditions, i.e. the financial and housing situation and employment, but also health and suitable childcare. Women with basic education (along with students) also place greater emphasis on the importance of having a suitable partner, including his employment and health situation. In contrast, women with one child do not differ much in their assessments of the importance of objective living conditions and partner when deciding whether to have a second child. From the standpoint of values, the phase of life in which a woman finds herself (including whether or not she is living with a partner) and her life plans concerning family size appear to be the determining factors in this respect. Neither education nor age is as important in this regard.

Women who actually plan to have a second child assess the impacts of that event on all aspects of their lives substantially more positively than do women who are not planning to have more children. The second-born child is expected to have a very positive influence above all on one's personal life, whether that is perceived as joy and satisfaction in life, the partnership or a general feeling of security (including the notion that children will care for their parents in their old age). A further domain in which a second child is expected to have a positive influence is in terms of an individual's social bonds, both within the family and within the context of wider social ties. The only areas in which another child is seen as having a more negative influence are financial situation, occupational life and personal independence. Here, too, women in a certain phase of life are very similar in their views regardless of level of education. Differences are associated more with aspirations with respect to motherhood and with the specific stage of the family cycle and, moreover, the opinions of women vary depending on the number of children they have at the time.

8. Realisation of childbearing intentions in the Czech Republic

An interest in fertility plans, intentions and declared ideal family size is closely linked with the possibility of predicting fertility. This chapter investigates childbearing intentions and the realisation thereof in the context of a country in which substantial social, political and economic transformation has resulted in rapid changes in demographic trends. The author has studied short term intentions with regard to having a child (within the next three years) and the realisation thereof by men and women born between 1960 and 1987 by means of a longitudinal study which considered fertility intentions within a three-year period and included subsequent follow-up work which monitored actual childbirth as well as respondents' "new or revised" childbearing intentions at the end of the period.

This study's prospective view is particularly important; the author uses Czech Generations and Gender Survey panel data from 2005 and 2008 and focuses on factors explaining the realisation / non-realisation of fertility intentions. Fertility intention is only one of several factors that can play a role in the whole of the decision-making process. Further factors that have to be taken into account consist of personal characteristics, a respondent's surrounding environment and social ties as well as changes in living conditions that might lead to a redefinition of the individual's initial plan. In addition, the author intends to include the labour-market factor since parenthood is often, especially for women, perceived as a negative influence on their occupational and therefore financial conditions.

This chapter will analyse and discuss four principal and closely interrelated research topics:

1. To what extent have different childbearing intentions "resulted in" childbirth over a three year period?
2. What kind of childbearing intentions are more likely to be realised? This leads on to a further closely related topic that is particularly important for fertility studies in demography: the question of the predictive power of declared intentions.
3. Which individual characteristics play a role in the realisation or non-realisation of time-specific fertility intentions?
4. What is the level of stability of such intentions should they not be realised? The author will study the stability of childbearing intentions with regard to those respondents who did not experience childbirth during the time period studied.

Over the period of observation considered in this study (2005-2008) the TFR in the Czech Republic increased from 1.28 in 2005 to 1.50 in 2008. Therefore the realisation of intentions and their predictive power were studied under what might be seen as relatively favourable conditions in which the populous cohorts of the 1970s realised their postponed childbearing in

relatively advantageous societal conditions and in an atmosphere in which the media frequently explained the numbers of newborn babies in terms of a "baby-boom". Moreover, this period of time saw changes in the amount of the birth and parental allowance and the introduction of new parental leave conditions. From April 2006 the birth allowance increased from 8 750 to 17 500 CZK per child; however in 2008 the allowance was reduced to 13 000 CZK per child. In 2007 the parental allowance was doubled from 3 696 CZK to 7 582 CZK and this change had been largelly discussed already during the second half of 2006. In January 2008 a more flexible 'multispeed' parental allowance was introduced which allows parents to choose between receiving the allowance for periods of 2, 3 or 4 years according to which the monthly amount of the benefit is based i.e. the higher rate (11 400 CZK) which can be drawn up to the child's 2nd birthday, the basic rate (7 600 CZK) drawn up to the child's 3rd birthday and the reduced rate (3 800 CZK) for the last 27 months when claiming parental allowance up to the child's 4th birthday.

8.1 Data and method

When studying fertility intentions and desires several options present themselves in terms of what to measure and how dependent on particular questions is a given questionnaire. The intentions of respondents may refer to "ever" having a child without indicating the time period within which those intentions will be realised. A further option is that in which intentions are measured within a certain time-frame and the respondent declares his/her fertility plans within a specific time-period or at / up to a certain age.

In this study, the author intends to focus on short-term intentions within a time-frame of three years following interview in order to be consistent with the length of the follow-up period. In order to study the realisation of such intentions one has to proceed from the most common approach that simply compares fertility intentions at a given point in time with the actual fertility level, to a longitudinal approach based on the re-interviewing of respondents in order to verify whether their childbearing plans came to fruition (Toulemon, Testa 2005). The author uses data from the Czech Generation and Gender Survey which took the form of a longitudinal study with a panel in 2005 and that was repeated in 2008. The second wave thus provides a unique opportunity to compare original opinions and plans with their future realisation. In 2005, both women and men were asked about their future childbearing plans and expectations concerning having a (another) child within the next three years; thus after the second wave in 2008 it was possible to assess whether those expectations had been met and whether and to what extent respondents' original opinions and attitudes with regard to children and their influence on family life were reflected in actual reproductive behaviour.

In this study the author uses the following basic question for the measurement of intentions: "Do you intend to have a (another) child during the next three years?" Possible answers consisted of: "definitely yes; probably yes; probably not; definitely not". For logistic regression analysis purposes the additional question "Supposing you do not have a/another child during the next three years, do you intend to have any (more) children at all?" was included to create

a variable defining short-term intentions according to declared certainty and longer-term intentions. By combining both questions a new variable was constructed and coded into the following categories: "definitely yes within 3 years", "probably yes within 3 years" and "yes, but later".

Pregnant women and male respondents with pregnant partners were not asked this questions in the 1st wave of the survey therefore they were omitted from the analysis. In addition, respondents who defined themselves as infertile were excluded from the analytical models; however they are covered in the descriptive findings. The realisation of childbearing intentions after 3 years was defined as being either when a child was born during the inter-survey period or there was a pregnancy at the 2nd interview (i.e. potential live births were considered to be achieved children).

Of the initial sample of 10 006 respondents consisting of men and women aged 18-79 years in 2005 this study is concerned with men and women aged 18-45 (generations 1960-1987). In 2005 the refined sample consisted of 5,199 respondents and was representative of the Czech population in that year. A total of 1 506 people from the generations selected for study were re-interviewed in 2008.

Panel attrition in this age group was high at 71%; this was due principally to refusals but also due to respondents moving, to death or simply because interviewers were unable to contact respondents. Since panel attrition was very high it was necessary to analyse it according to interest variables since such attrition might be connected with both positive and negative fertility intentions and their certainty thus rendering the results biased. The test consisted of a comparison of respondents from defined generations who participated in the second interview and those who were not re-interviewed and in which their declared childbearing intentions within the following three years were studied, controlling for other covariates. The research found that there was no bias due to attrition in the sub-sample with regard to declared short-term fertility intentions. In addition, it was found that gender, partnership status, infertility and education parameters were also not biased by attrition. Conversely, attrition was found to be slightly higher for younger respondents (18-29 years in 2005) and childless respondents. The attrition rate was lower for women on maternity/parental leave "all other things being equal".

Due to the limitations of the data and the small sample size the author was, to a considerable extent, limited in terms of running more stratified analysis by gender, age or parity. Therefore binary-logistic regression models were designed in order to analyse the realisation of positive childbearing intentions for both men and women and for all parity and this characteristic was employed as a covariate in the models. Only those respondents who declared positive short-term or longer-term childbearing intentions and who participated in both waves of the panel survey were included.

The logistic regression model is used to explain the effects of the explanatory variables on the dependent variable having a child during the inter-survey period (Y=1 if a child was born during the period between the two interviews or in case of a pregnancy at the second interview, otherwise Y=0). Let $x = (x_1, \ldots x_k)'$ be the vector of explanatory variables.

$$\text{logit}\left(\Pr\langle Y=1|x\rangle\right)=\log\left\{\frac{\Pr\langle Y=1|x\rangle}{1-\Pr\langle Y=1|x\rangle}\right\}=\beta_0+x'\beta,$$

where β_0 is the intercept parameter and β is the vector of slope parameters.

Several demographic and socio-economic characteristics collected in 2005 are included in the models as **explanatory variables**. All the following covariates are categorical and were transformed into dummy variables:

- gender
- age, coded into four groups: 18-24, 25-29 (reference category), 30-34 and 35-45 years
- number of children that respondents had when declaring their future childbearing intentions – coded into three groups – no child (reference category), 1 child and 2 and more children. This covariate includes biological children only. In this stage of the research the role of step-children, adopted or foster children living in the respondent's household was ignored, however their role could, in certain cases, be more important than for example the role of biological children who do not live in the same household as the respondent.
- education - refers to the highest level of completed study and is coded as basic, secondary without the school-leaving exam at age 18/19, secondary with the school-leaving exam at age 18/19 (reference category) and tertiary (post-secondary vocational schools or universities)
- partnership status, coded as: single (reference category), LAT – living apart from the partner irrespective of the respondent's legal marital status, cohabitation and married (this category implies not only legal marital status but also sharing the same household with the respondent's spouse)
- employment status, coded as employed (reference category), unemployed, maternity/parental leave, studying, not working (housewife, other)

8.2 Results - realisation of childbearing intentions

8.2.1 Descriptive findings

Of all the men and women in the panel sample aged 18-45 in 2005 and who (or whose partner) were not pregnant at the first interview 9.7% gave birth to a (another) child during the period observed or declared a pregnancy at the second interview. Table 8.1 shows the distribution of men and women according to their childbearing intentions as declared in 2005. A combination of questions addressing the certainty of short-term intentions with a timing perspective was used

for the creation of the variable used both in table 8.3 and for the regression model[44] (part 8.2.2). One quarter of both men and women declared that they intended to have a (another) child within the following three years, the difference lies in the level of certainty of the intention, since women declared such an intention more often and with a higher level of certainty than men. The second column of the table provides the proportions of those who experienced childbirth during the three-year period or declared a pregnancy at the second interview according to their initial intentions. For example 27% of men who definitely wanted a child in 2005 actually had a child during the period compared to only 5% of those who initially intended not to have a child.

The results show that those who planned to have a child later were very consistent in their subsequent behaviour and only 4% of men and women gave birth to a child during the period studied. This proportion is even smaller than the percentage of those who did not want to have a child at all in 2005 but finally had one (5% of men and 6% of woman). Conversely, a considerable proportion of those who had a positive intention did not realise their stated birth intentions during the given time period. The level of certainty of the intention also determines its fulfilment, at least when it concerns "positive" intentions; short term intentions are more likely to be realised if there is a higher level of certainty (the "definitely yes" response).

The gender difference in the realisation of the intention is evident in the case of planning a birth. Women's intentions to have a child are much more likely to be realised than those of men – 45% of female respondents who definitely intended to have a child in the near future fulfilled their plan (compared to 27% of men) and 22% of those who had a probable intention of having a child did so (compared to 10% of men).

Table 8.1 Childbearing intentions according to certainty and timing, proportion of those having a child within the 3-year period, Czech Republic (in %)

Childbirth intention declared in 2005	Men		Women	
	Distribution in 2005 (in %)	Had a child within 3 years	Distribution in 2005 (in %)	Had a child within 3 years
Definitely yes within 3 years	6.5	26.7	12.3	44.9
Probably yes within 3 years	17.5	9.9	12.8	21.5
Yes, but later	34.5	3.8	14.5	3.8
No	40.4	4.7	55.8	5.7
Cannot have (more) children	1.0	28.6	4.7	2.9
Total	100.0	7.0	100.0	12.1

Note: N = 690 men and 726 women aged 18-45 years in 2005. Current pregnancies included in the % of births (children within three years).

Source: GGS 2005 and 2008, panel data

The number of children that an individual currently has is an important factor in both measuring intentions and in predicting future realisation. The argumentation behind which is

[44] Question 1: "Do you intend to have a (another) child during the next three years?" Possible answers consisted of: "definitely yes; probably yes; probably not; definitely not". Question 2 "Supposing you do not have a/another child during the next three years, do you intend to have any (more) children at all?" By combining both questions a new variable was constructed and coded into the following categories: "definitely yes within 3 years", "probably yes within 3 years", "yes, but later", "no".

based on the qualitative disparity between the two different stages in the life course defined by parenthood – the intention of having and the timing of a first birth, thus the intention of entering into parenthood, can be seen as qualitatively different from the decision to have subsequent children.

When comparing short-term fertility intentions and the realisation thereof according to the number of a respondent's existing biological children, the idea of a two-child family being realised over the short period of time is a distinctive feature and is obvious from the research results (table 8.2):

Firstly, when comparing the intentions of respondents according to the number of children they had when first interviewed, those with one child declared a positive intention of having another within 3 years more frequently (more than 40%) than childless respondents and respondents who already had 2 children. Families with more than two children make up a minority reproduction group (Rychtaříková 2003) in the Czech Republic; the probability of the birth of a third child has remained very low among Czech women for some time and continues to fall from one generation to the next (Pikálková 2003). Therefore, not surprisingly, respondents overwhelmingly declared zero short-term birth intentions in terms of having a 3rd child. Secondly, short-term intentions of having a second child are more likely to be realised than those of having a first child, particularly when the intention is certain (half of the respondents who definitely intended to have a 2nd child did so within the 3-year period).

Table 8.2 Childbearing intentions and proportion of those having a child within the 3-year period and the rate of realisation of initial intention, by number of children in 2005, Czech Republic (in %)

Short-term childbearing intention 2005 – within 3 years	Distribution 2005	Had a child within 3 years
Intention to have a 1st child		
Definitely yes	11.4	33.3
Probably yes	20.2	11.7
Probably no	27.3	5.2
Definitely no	39.7	4.4
Cannot have (more) children	1.4	0.0
Intention to have a 2nd child		
Definitely yes	17.7	**51.0**
Probably yes	23.8	**22.7**
Probably no	19.9	9.1
Definitely no	35.7	6.1
Cannot have (more) children	2.9	25.0
Intention to have a 3rd child		
Definitely yes	3.2	23.1
Probably yes	4.2	5.9
Probably no	13.7	7.1
Definitely no	**75.1**	2.6
Cannot have (more) children	3.9	6.3

Note: N = 634 childless respondents, N = 277 respondents with 1 child and N = 409 respondents with 2 children in 2005. Men and women aged 18-45 years in 2005. Current pregnancies included in the % of births (realisation of positive intention).

Source: GGS 2005 and 2008, panel data

8.2.2 The realisation of childbearing intentions and intervening factors

The author has shown that a considerable proportion of men and women who initially declared the intention of having a child in the near future did not do so in the given time period. Several factors could explain why those intentions remained unrealised e.g. the revision of intentions over the course of time, highlighted e.g. by Smallwood and Jefferies (2003) or Monnier (1987), as a result of changes in an individual's private life, personal experiences or societal changes. Moreover, the same set of factors – demographic and social criteria and life course events – could lead to a change in timing (non-realised births could be postponed) or total rejection.

Therefore in the next part of the study, the author proposes to analyse to what extent demographic and selected socio-economic criteria influence childbirth and the role played by childbearing intentions and to outline which characteristics are strongest in influencing eventual realisation. Table 8.3 reveals odds ratios of having a child as estimated by binary logistic regression models. The first model includes the fertility intentions variable only. Subsequent models control for the effects of relevant background variables: model 2 controls for selected demographic variables only and model 3 controls for both demographic and socio-economic variables. The final model (model 4) contains all the afore-mentioned variables.

The main background factors predicting who will actually have a birth in the following three-year period consist of partnership status. A single person[45] was shown to have the lowest chance of having a child during the following three years whereas married couples had the highest chance. The effect of having a partner but not being married to him/her is slightly lower for respondents living apart (LAT) from the partner than for those cohabiting, but the difference is negligible and the odds of their having a child is still substantially greater than that of a single person.

This finding is consistent with other longitudinal studies (e.g. Toulemon and Testa 2006 for childless people in France; Kapitány and Spéder 2008 using the comparable data source of the Hungarian GGS; Philipov and Testa 2008 using the Bulgarian GGS) as well as with previous findings concerning declared required conditions for positive childbearing intentions in the Czech Republic. Great emphasis is placed on the importance of a suitable partner including his employment and health status among other factors associated with the childbearing decision-making process. Moreover, the importance of having a suitable partner is more stressed by certain social groups than others, particularly by Czech women with basic education only and women still in education (Šťastná 2007b).

Interestingly, employment status, level of education and the number of children do not play a significant role. Contrary to the descriptive findings, the number of children a respondent has does not determine the chances of having a child in the given time period. Only having two and more children seems to lower the chances of realising the initial positive intention, however the difference is not significant.

[45] 68%of singles planed to have a child later than during the following three years. Only 7% of singles firmly declared the plan to have a child during the inter-survey period, 25% probably wanted a child within 3 years.

Table 8.3 Odds ratios concerning having a child between 2005 and 2008 (inter-survey period), Czech Republic

		Model 1	Model 2	Model 3	Model 4
		Exp(B)	Exp(B)	Exp(B)	Exp(B)
Childbearing intention (ref. Wants a child later)	Definitely wants a child within 3 years	16.10 ***			5.46 ***
	Probably wants a child within 3 years	4.46 ***			2.11
	Wants a child later	*1*			*1*
Gender (ref. Male)	*Male*		*1*	*1*	*1*
	Female		2.20 **	2.05 **	1.60
Age of respondent in 2005 (ref. 25-29)	Age 18-24		0.28 ***	0.41 *	0.54
	Age 25-29		*1*	*1*	*1*
	Age 30-34		0.51 *	0.51 *	0.50 *
	Age 35+		0.40 *	0.45	0.45
Number of children (ref. Childless)	*0*		*1*	*1*	*1*
	1		1.08	0.92	1.02
	2 and more		0.45	0.41	0.62
Partnership status (ref. No partner)	*No partner*		*1*	*1*	*1*
	LAT		2.90 *	3.22 **	3.09 *
	Cohabitation		4.93 ***	4.68 ***	3.45 **
	Married		9.11 ***	8.04 ***	4.94 ***
Education (ref. secondary /leaving exam at age 18/19)	Basic			1.23	1.27
	Secondary / without leaving exam at age 18/19			0.71	0.72
	Secondary / leaving exam at age 18/19			*1*	*1*
	Tertiary			1.43	1.55
Socio-economic status (ref. Employed)	*Employed*			*1*	*1*
	Unemployed			1.33	1.23
	Maternity / parental leave			1.42	1.39
	Student			1.12	2.13
	Not working			0.26	0.18
Constant		0.039 ***	0.060 ***	0.069 ***	0.040 ***
N		691	691	691	691

p < 0.5; ** p < 0.01; *** p < 0.001

Note: (1) N = 691 men and women aged 18-45 years in 2005 who declared a positive intention of having a (another) child within the next three years or later. Dependent variable: having a child during the period between the two interviews or pregnancy at the second interview (contrasted against no child born during the intre-survey period).
(2) Educational level is characterised as follows: "basic" (uncompleted or basic education only, compulsory education (8 / 9 years)), "secondary/without leaving exam" (apprenticeship or secondary education without the School-Leaving exam), "secondary/leaving exam" (completed upper-secondary education with the School-Leaving Exam including follow-up courses) and "tertiary" (higher technical colleges including conservatoires and universities).

Source: GGS 2005 and 2008, panel data

Childbearing intentions appear to be a very significant covariate in terms of explaining the birth of a child during the inter-survey period; the highest coefficients can be seen in the

intentions-only model (model 1). Even though coefficients characterising short-term intentions are lower in the full model (model 4), the chances of realising a declared certain positive intention remains very high compared to long-term plans and remains highly significant when controlling for other explanatory variables.

The results of model 4 (table 8.3) also indicate that childbearing intentions represent specific information explaining childbearing behaviour and have their own interpretative potential. This conclusion is based particularly on results which document that the effects of demographic and socio-economic variables do not vary substantially between the model that includes and that which excludes the intentions covariate. The two distinctive variations in the significance of the gender and age covariates are clearly mediated through different intentions in terms of timing – the youngest age group more frequently contains those who plan to have a child but later than within 3 years.

As for gender, women often declared a firm short-term intention in contrast to men who tended to express longer-term intentions. After including the interaction between the fertility intention covariate and gender in model 4 (table 8.4), it is evident that women are more likely to realize their short-term childbearing plans than men no matter how certain their positive short-term intentions were.

Table 8.4 Odds ratios concerning having a child between 2005 and 2008 – interaction effect of gender and childbearing intention, Czech Republic

		Men	Women
		Exp(B)	Exp(B)
Childbearing intention (ref. Men*Wants a child later)	Definitely wants a child within 3 years	3.87 *	6.39 ***
	Probably wants a child within 3 years	1.19	2.81 *
	Wants a child later	1	0.67

p < 0.5; ** p < 0.01; *** p < 0.001

Note: Covariates from Model 4 are controlled.

Source: GGS 2005 and 2008, panel data

8.2.3 Stability of intentions among those who did not have a child between 2005 and 2008

In the inter-survey period changes may well have occurred in the respondent's personal circumstances, life course or within the surrounding environment that will have an impact on his/her original intentions and will lead to a revision of his/her plans. Not only external factors influence the process of changing or redefining childbearing intentions; the individual might well modify his/her previously declared intention after discovering that his/ her evaluation of the factors taken into account in the decision-making process was biased.

Therefore the author provides an overview of the stability of childbearing intentions for those respondents who did not experience childbirth between the two interviews. The study will investigate what happened to declared intentions during the period in which their realisation was

expected and, in fact, for the majority of respondents, were also fulfilled (those who did not want to have more children).

Firstly, when one investigates positive short-term childbearing plans from 2005 that were not realised it is evident that a proportion of respondents had decided to postpone childbearing until later (16.9%) and a very significant number had abandoned their childbearing plan altogether (35.5%). 45% remained consistent and after three years declared once more the intention of having a child within the next 3 years.

Those who constructed their childbearing plans over the longer time period also remained relatively consistent in their attitudes and after 3 years once more declared their desire to have a child but later than within the next 3 years (43%). Almost one third of respondents had accelerated their plans and intended to have a child in the short-term. However once more, almost a quarter had abandoned their childbearing intentions.

The most consistent group of respondents contained those who had no future fertility plans only around 12% of whom subsequently considered having a (another) child now or later; more than 80% however remained negative in terms of future fertility plans.

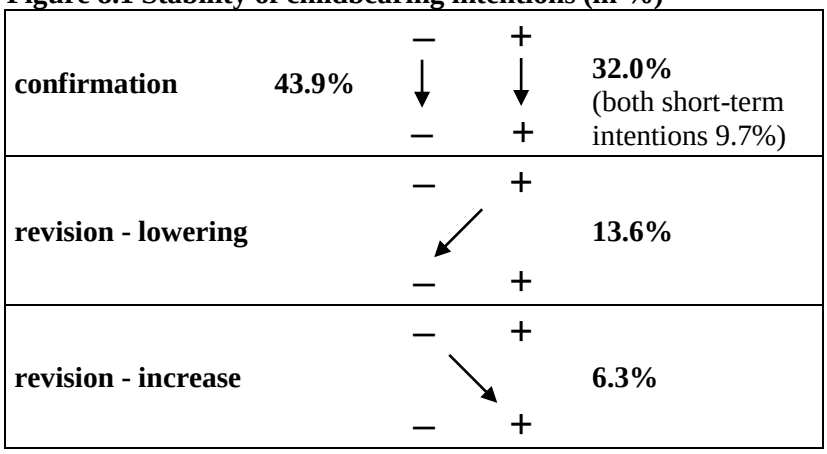
Table 8.5 Stability of childbearing intentions among those who didn't experience childbirth between 2005 and 2008. Czech Republic (abs. and %)

Childbearing plan in **2005**	Childbearing plan in **2008**				Total
	Child within next 3 years (definitely + probably)	Child later	No child (neither within 3 years nor later)	Cannot have children	
Child within next 3 years (definitely + probably)	111	42	88	7	248
	44.8	*16.9*	*35.5*	*2.8*	*100.0*
Child later	91	123	68	3	285
	31.9	*43.2*	*23.9*	*1.1*	*100.0*
No child (neither within 3 years nor later)	43	29	504	38	614
	7.0	*4.7*	*82.1*	*6.2*	*100.0*

N = 1147 men and women who did not experience childbirth between the two interviews and who, in 2005, declared they could have (in physiological terms) a child.

Figure 8.1 summarises the overall stability or redefinition of childbearing intentions among the sub-sample of men and women who did not have a child within the inter-survey period or a pregnancy at the second interview in 2008. The results show the obvious dominance of the confirmation of intentions, both positive and negative (zero), the latter being dominant. In terms of redefinition, positive childbearing intentions were more frequently abandoned (14%). Only 6% of those respondents who initially rejected having a child in the future subsequently expressed the desire to have a child.

Figure 8.1 Stability of childbearing intentions (in %)



Note: -… zero intention (intention not to have another child), +… intention to have a (another) child. N = 1147. 4.2% of the total comprises those who declared they could not have children in 2008. Including this number, the total sum of the bold percentages in the chart = 100%.

The final part of the chapter focuses on the so-called "abandoners" – those women and men who initially declared positive childbearing intentions (either short- or longer-term in 2005) but who did not have a child in the inter-survey period and, moreover, declared that they no longer planned to have a child 2008. The binary-logistic regression model was employed to analyse this group. Only those respondents who declared positive childbearing intentions and who had no child in the inter-survey period were included; the response variable was equal to 1 if they declared that they did not plan any (additional) children in 2008. A set of demographic and educational characteristics are included in the models as explanatory variables (for the full specification, see chapter 8.1).

People who already had children in 2005 and especially those with more than one child were found to be more likely to abandon their childbearing plans. In addition, people aged 35+ were more likely to abandon their fertility plans than younger age groups who are evidently more easily able to postpone childbearing until a later age. Even though level of education was found not to play a significant role in models which studied the realization of intentions (table 8.6), lower educational attainment does appear to result in a significantly higher chance of initial fertility plans being abandoned. It might be supposed that the economic situation of those with lower levels of education influences such behaviour. Nevertheless, when a subjective evaluation of the material conditions of respondents was included in the model, the chances of fertility intentions being abandoned still remained significantly higher for the lower educated. Therefore it can be assumed that highly educated people construct their life plans in both a more realistic and stable way than the lower educated and that their plans are not easily influenced by either external or internal factors.

Table 8.6 Odds ratios concerning abandoning childbearing intentions between 2005 and 2008, Czech Republic

		Exp(B)	
Gender (*ref. male*)	*Male*	*1*	
	Female	1.45	
Age of respondent in 2005 (*ref. 25-29*)	Age 18-24	0.83	
	Age 25-29	*1*	
	Age 30-34	1.39	
	Age 35+	6.98	***
Number of children (*ref. childless*)	*0*	*1*	
	1	2.41	**
	2 and more	6.12	***
Education (*ref. secondary with school-leaving exam at age 18/19*)	Basic	2.31	**
	Secondary / without leaving exam at age 18/19	1.81	*
	Secondary / leaving exam at age 18/19	*1*	
	Tertiary	0.47	
Constant		0.143	***
N		523	

p < 0.5; ** p < 0.01; *** p < 0.001
Note: N = 523 men and women who declared positive childbearing intentions and who had no child in the inter-survey period.
Source: GGS 2005 and 2008, panel data

8.3 Conclusion

In this chapter the author studied to what extent childbearing intentions play a role in real behaviour. The intention to have a child appears to be an important covariate expressing the chances of giving birth during a defined period of time. The highest chances of realising positive fertility intentions pertain particularly to those who expressed a declared certain positive short-term intention. Even though intentions themselves affect the chances of having a child they represent a somewhat uncertain predictor of future fertility.

The analysis of longitudinal data documents a high level of consistency between zero fertility plans and subsequent behaviour. The highest proportion of "consistent" respondents consists of those who did not want and subsequently did not have any (additional) children. Mixed results were obtained concerning the predictive power of short-term fertility intentions resulting in an overestimation of the number of actual births. This overestimation could be affected both by postponement and by intervening factors impacting upon a respondent's original plans. As fertility plans and their certainties vary according to parity, better predictive qualities were observed when the level of certainty of intention was highest.

As mentioned above, due to the limitations of the data set, the findings must be considered with a certain amount of caution due principally to the high level of panel attrition. Moreover,

the small sample size prevented the author from performing a more stratified analysis. However, the author has attempted to test the potential for the selectivity effect in the data set and presents those results having a high level of significance.

9. The Life Course Approach

The conceptual framework of life-course analysis is based on the study of individual histories and careers associated particularly with the Chicago tradition of sociological analysis. Inspired by Thomas and Znaniecki`s work "The Polish Peasant in Europe and America" (1918-1920) researchers began to use life-history records and data to study individual trajectories and social change (Elder, Jr. 1985). The significant features of the early Chicago school of sociology consisted of its focus on the biographical approach and biographical analysis methods, the study of the individual, groups and social organisations in specific situations, its sensitivity to the historical context and an interest in the process of social change. W. I. Thomas, one of the leading figures of this school, stressed the importance of the longitudinal approach to life history. He argued that studies should investigate "many types of individuals with regard to their experiences and various past periods of life in different situations" and follow "groups of individuals into the future, getting a continuous record of experiences as they occur" (cf. Elder, Jr. 1985:24). Thomas's proposals anticipated the study of the life course as well as longitudinal research which is employed today not only in the field of sociology but also in other social science disciplines.

The second phase of the life course as an important topic for social research commenced in the 1960s when a higher sensitivity to the links between social change and the life course was renewed as the social structure and life styles of the industrial society were transformed into more individualised life concepts of the post-industrial society[46]. Moreover, a number of theoretical developments based on a better understanding of the concept of age in society and history contributed towards clarifying the relationship between social and individual change. Finally, the interplay between theoretical activities and research became deeper (Elder, Jr. 1985) and advances in the use of longitudinal studies and the collecting of life histories in both retrospective and prospective research designs contributed towards a deeper analysis of life course dynamics.

As Elder Jr. et al. (2003) emphasise, the life course as a theoretical orientation came from the desire to understand social pathways, their developmental effects and their relationship to personal and social-historical conditions. The life course can be seen as an evolving process from infancy to childhood to adolescence to adulthood to mature age (Alan 1989, Willekens 1999). In this process, life (demographic) events play the role of milestones or important transitions and represent the most basic elements of the life course. The life course also refers to pathways through the age-differentiated life span, to social patterns in the timing, duration, spacing, and order of events (Elder, Jr. 1978).

[46] The author uses a distinction according to Bell's characteristics and labelling of societies; however for this period different authors use different labels and stress different key features – for more information on types of society see e.g. Petrusek 2007.

According to the life course approach, diverse life events (also named transitions in life) do not occur randomly or in isolation but have a certain structure. The fundamental concept underlying this structure is ***time***. The life course approach distinguishes at least three time dimensions: biographical time, historical time and social time (Dykstra, van Wissen 1999: 5-6). *Biographical time* represents chronological order in life and supports the idea that experiences gained earlier in life might have an impact on choices made later in life. In addition, events experienced in one life domain may have an impact on events occurring in other life domains since a person's biography consists of multiple dimensions and various life domains that are interconnected.

Historical time traces the effects of historical changes on an individual's life. It emphasises the particular configuration of an economic, socio-cultural, political or physical context as a historical development exposure and is concerned with the location of individuals within this historical time perspective and changing societal conditions.

Social time reveals the effects of the social age calendar, such as institutions and social norms and values. At the social level, many restrictions are imposed on the scheduling of life events "to foster the smooth and effective functioning of society" (Willekens 1999:34). Many social norms are legal restrictions that have an effect on the timing and sequencing of life events (e.g. minimum age of sexual intercourse and marriage). Moreover, age norms often operate as social clocks indicating whether an individual is "early", "late" or "on time" (Willekens 1999:34) for a significant life event and thus reflect social expectations about the proper timing of life events.

The concepts of time and age are closely interrelated within the life course approach. Age is an important variable, particularly in demography, as it refers to a time scale that is appropriate for an analysis of the distribution of specific behaviour and events in the course of a person's life. As such it represents a key dimension in the organisation of an individual's life course and consequently in the organisation of societal structures. Age differentiation is manifested in expectations and options that intervene in decision-making processes and the course of events that give shape to life stages, transitions and turning points. Such differentiation is based on the social meaning of age ("social clocks") and the biological fact of birth, sexual maturity, and death. Elder, Jr. (1978) shows that these meanings have varied through social history and across cultures at points in time, as documented by evidence on socially recognised age categories.

According to Willekens (1999) three ***main objectives of life course analysis*** can be identified. Firstly, life course analysis aims to detect a pattern in the timing and sequence of life events (to identify and describe the "life structure"). Secondly, it studies whether and how different life events are related (aims to explain the "life structure" by identifying underlying elementary processes and describing how structure emerges from interactions among these processes). Thirdly, it tries to predict or reconstruct life histories from partial observations (to predict the entire life history given the data).

The life course provides a framework for studying phenomena within evolving social pathways, developmental trajectories and social change. Elder Jr. et al. (2003) summarise five

key principles involved in this approach. These principles stress the recognition of individual choice and decision-making and support the importance of an understanding of the social context, the history and timing of events and role change. Not least it enhances the understanding of the importance of significant others, relationships and social links. Following Elder Jr. et al. (2003: 11-14) the five principles can be termed and characterised as:

1. *The principle of life-span development* which stresses that human development and ageing are lifelong processes and in order to understand this development it is necessary to take a long-term perspective. Once lives are studied over substantial periods of time the potential interplay of social change with individual development increases.
2. *The principle of agency* which emphasises that individuals construct their own life courses through their choices and actions in the context of the opportunities and constraints of history and social circumstance. Instead of being passively acted upon by social influence and structural constraints, individuals make choices and compromises based on the alternatives that he/she perceives before him/her.
3. *The principle of time and place* which refers to the life course that is embedded and shaped by the historical times and places they experience over their lifetimes. Individuals as well as generations are influenced by historical context and place and the same historical event or change may differ in meaning across different regions, nations and generations. Well known examples in terms of life history research include studies on how different generations were affected by specific conditions such as the Great Depression of the 1930s or the Second World War (Dykstra, van Wissen 1999).
4. *The principle of timing* which denotes that the developmental antecedents and consequences of life transitions, events and behavioural patterns vary according to their timing in a person's life. The effects of the same events or experiences as well as their meaning may be very different for individuals depending on when they occur in the life course.
5. *The principle of linked lives* which shows that lives are lived interdependently and socio-historical influences are expressed through this network of shared relationships. Individual lives are lived interdependently and transitions in one person's life often also involve transitions for other people (e.g. the transition into motherhood for a woman means at the same time a transition into grandparenthood for her parents and for her partner's parents). Generally, individuals are often affected by larger social changes through the impact that such changes have on their interpersonal contexts within micro-level settings.

Questions about change and event occurrence have formed the subject of a great deal of empirical research. Studying different processes and answering different types of questions require different statistical approaches. In order to analyse life careers, different quantitative

social science approaches, based on longitudinal and panel data, are employed (more in Singer, Willett 2003, Pakosta, Fučík 2009). Analysis focused on change uses methods known variously as individual growth modelling, multilevel modelling, hierarchical modelling, and random coefficient regression and mixed modelling (Singer, Willett 2003). For studying issues of an event occurrence, methods of event history analysis are employed.

9.1 Event history analysis

Event history modelling techniques have become increasingly widespread in the social sciences over the last few decades and the range of applications includes demographic and sociological analysis, labour market studies, mobility and migration studies, as well as political science. Therefore this section devotes attention to the concept of event history analysis and the basic principles, methods and data which are involved.

9.1.1 Concept and basic principles

Event history analysis[47] is concerned with the patterns and correlates of the occurrences of events (Yamaguchi 1991). Demographers, in a similar way to other social scientists, study individual life events such as births, family formation and dissolutions via marriage and divorce, migration, and death and the study of the life course forms an essential part of demographic analysis. According to the classic demography paradigm, each of these phenomena and processes is analysed independently of the others (Courgeau 2002) and for the cohort observed by standard longitudinal analysis it is required to remain homogeneous (Lelièvre, Bringé 1998). The underlying intention is to isolate a process and to study its properties in the absence of other processes, thus in the "pure state" (Henry 1959 cit. from Courgeau 2002: 100). In order to describe the life course, demography employs the dynamic life-table technique. Traditionally, mortality tables were used to describe the mortality patterns of the population, and recently fertility or nuptiality tables have been employed when studying childbearing and partnership formation patterns. However, the analysis of one process supposing no other competing phenomenon is insufficient when dealing with two main issues, i.e. the heterogeneity of the population and interactions between demographic phenomena.

Therefore a new paradigm based on a more complex approach towards the analysis of human behaviour has been developed. In this approach "investigation is focused not on homogeneous sub-populations but on a series of individual life courses involving a succession of different states" (Courgeau 2002: 100). Compared to the classical paradigm, the unit of analysis is no longer a single phenomenon but an individual's life history considered as a complex stochastic process (Lelièvre, Bringé 1998, Courgeau 2002). Event history analysis also takes into account disturbing phenomena and allows the study of how the occurrence of one phenomenon (such as migration to urban areas) may affect the likelihood of other events (such as nuptiality and fertility). Moreover such analysis respects the order of the events studied.

[47] Also known as survival analysis, failure time analysis or hazard modelling.

In principle, ***event history analysis*** is an extension of the complex of approaches connected with the life table method (Hoem 1993 cit from Manting 1994). Using the life course approach, the new paradigm might be characterised as "throughout his or her life, an individual follows a complex trajectory, which, at any given point in time, is dependent on his life history to date, the information he has accumulated in the past and the conditions prevailing in the society of which he is a member" (Courgeau 2002: 100).

Event history analysis might be defined as the analysis of the duration of the non-occurrence of a given event during the risk period (Yamaguchi 1991). As far as the life course approach is concerned, this model focuses on life events[48], i.e. "the events that cause a change from one stage (state) of life to another" (Willekens 1999: 44). The measurement of the **duration of exposure to an event** (risk period) is crucial for this model. Exposure can be defined as a stage or episode in the life course that is initiated by the occurrence of an event and terminated by the occurrence of another event. In addition to the duration of exposure, it is necessary to distinguish the duration of observation of the person exposed to risk. This method allows the analysis of individuals belonging to different sub-populations; however all the subjects of the study must be at the observation starting point and in the same stage of the process (for example, the starting point for the analysis of divorce is the date of the marriage). Individuals who experience an intervening event are not excluded from the analysis; they simply change their status which allows the study of any subsequent behaviour modification.

The basic unit of the life course is thus the **life event** that can be defined in terms of four aspects – type of event, type of occurrence, the likelihood of occurrence (risk of experiencing an event) and the reason for occurrence (effects of other events and processes) (Willekens 1999). Both the individual timing of events and the historical temporal context in which the individual life course takes place are essential for this approach; hence time is implicitly emphasised in event history analysis. Effort is devoted to the measurement of the period during which the individual is exposed to the risk of the event studied. Therefore two concepts are essential for event history analysis - time and risk.

Time

The (exact) timing of the event forms the centre of interest. For a detailed analysis of the timing of events it is necessary to know the time interval between the origin state and the event studied (e.g. when studying the risk of divorce this interval consists of the time between marriage and divorce). However, not all respondents undergo an event before the end of the observation period (in principle before the date of the interview) and furthermore, not all of them are observed in a given life-stage for the same length of time. Compared to classical analysis methods, event history analysis can easily work with all these types of information. The former calculate the average length of the marriage only for those partnerships that experienced

[48] Other types of life history modes are based on the *status approach* and are designed to predict state occupancies. For a given age or different ages, the number of subjects in each category is described. The state occupied at a given age may be seen as an outcome of underlying processes (Willekens 1999). Recently, the status approach was introduced into the Czech context by Chaloupková (2009) who analysed the family and professional careers of young Czechs.

separation or widowhood. However such a result does not provide information on the actual duration of the marriage since it does not include those marriages that are still valid.

In addition to discussion on the different concepts of time (see chapter 9 above), the measurement of time may create several problems. Willekens (1999) accentuates two principals. Firstly, the time at which an event occurs is generally different from the time at which the occurrence is initiated (e.g. in fertility studies the impact of casual factors on the timing of birth are often considered whereas it would be better to consider such impacts on the timing of conception although the timing of conception could in some cases significantly differ from the onset of the efforts of a couple to achieve a pregnancy). Ideally time should refer to the time of the onset of a process, even though, in general, it can be difficult to determine. Secondly, methodological problems arise if the measurement scale used by the researcher differs from that used by the respondent. This difference relates to the distinction between objective measurability and the subjective perception of time and notions of external (given) time and internal (experienced) time.

Risk

According to event history analysis, an individual is at risk of an event (or is exposed to an event) if he or she can experience the event. Being at risk of an event indicates that there is a chance that the event will occur (probability in not equal to zero) (Willekens 1999). For instance, only women who already have one child are at risk of a second birth, only single, divorced or widowed persons can marry and only married persons are at risk of divorce. Although the term "risk" is usually associated with the possibility of the occurrence of harm or damage in everyday discourse, as far as the event history theory is concerned it refers to the positive probability of an event.

To sum up, given the basic principles described above one has the minimum data required for event history analysis - the recording of the occurrence of a particular event for a group of individuals which is measured by duration, as well as other details on the subject suitable for studying the impact of individual characteristics on such time durations. Therefore, the following conditions must be met in order to employ this methodology (according to Lelièvre, Bringé 1998): (1) the ***origin*** (t=0) that is common to all individuals has to be clearly defined. Generally, this common origin for the analytical sample corresponds to the date of a past event (e.g. marriage when studying divorce). Subsequently, the ***observed event*** may occur. The ***duration*** observed denotes the time between the initial event (origin) and the event studied, or the end of the observation if the event does not occur before then. (2) ***Time*** should be marked on a common time-scale (the time elapsed since the origin can be measured in days, months, years, etc.). (3) The ***event*** itself must be clearly defined; this is usually not a problem for dated demographic events. However, in the case of repeated events it has to be clearly specified (e.g. first or second marriage, birth order). Other non-demographic events (for example changes in education enrolment) should be defined according to the substance of the content (e.g. in compliance with the focus of the study, it must be determined whether one is studying a change in school, educational level, field or place of study etc.; alternatively individuals could be asked

only in terms of the completion of the highest educational level and changes in socio-economic status upon leaving the education system).

One of the major ***advantages*** of the event history analysis of duration data is its capacity to deal with certain types of censored observations (Yamaguchi 1991, Manting 1994, Lelièvre, Bringé 1998). ***Censoring*** concerns a situation wherein incomplete information about the duration of the risk period is available because of a limited observation time, i.e. when observation covers only part of the period.

Generally, two types of censoring can be distinguished: censoring on the right and censoring on the left. Right censoring typically occurs on the date of the survey if the risk period of a subject commences during the period of observation and the subject has not yet experienced the event when observation is terminated (at the time of the interview). Such a subject is thus censored on the right since the date of exit from the risk period (the date of the event) remains unknown. In this case an individual enters into the analysis with the duration of the risk period measured only from his or her entry into the population under risk until the survey date. Usually the longer the period of observation, the less likely is it that an event will not occur. Right censoring is also important in cases where an event will not be experienced by every member of a generation (e.g. marriage, childbirth) regardless of the length of the observation (a certain generation could be observed up to the death of its last member and still a proportion of women will remain unmarried or childless).

Left censoring is a further type of censoring and occurs whenever information on entry to a certain status is lacking, e.g. if the timing of the marriage is unknown when studying divorce (Manting 1994).

A further advantage of event history analysis is the potential for the ***simultaneous examination of interdependent life domains*** in order to study their impact on the occurrence and timing of events. Using this approach, the question of various individual, time-specific determinants of individual behaviour can be addressed.

Moreover, event history models can quite easily deal with ***time-varying individual characteristics***, i.e. characteristics that can change over time such as education level, partnership status, number of children and employment status.

9.1.2 Mathematical principles

In terms of a formal representation of the basic mathematical principles underlying event history analysis (as presented in Courgeau, Lelièvre 1989, Lelièvre, Bringé 1998 and Box-Steffensmeier, Jones 2004), T is defined as a positive random variable for the duration of the period of an event (i.e. survival time). It is assumed that T is continuous[49]. The actual survival

[49] Models which work with discreet-time data are known as discrete-time models and are not addressed in this chapter. For more details see e.g. Allison (1982), Singer, Willett (2003), Vermunt (1997), Yamaguchi (1991).

time of a unit is formed by the realisation of the value of *T* and can be denoted *t*. Possible values of *T* have a **probability distribution** that is characterised by a probability density function, *f(t)*, and a cumulative distribution function, *F(t)*.

The cumulative distribution function of random variable *T* is:

$$F(t) = \int_0^t f(x)dx = P(T \leq t) \qquad \textbf{(9.1)}$$

which specifies the probability that a survival time of *T* is less or equal to value *t*. The density function for all points for which *F(t)* is differentiable is:

$$f(t) = \frac{dF(t)}{d(t)} = F'(t) \qquad \textbf{(9.2)}$$

The density function, *f(t)*, gives the unconditional failure rate of event occurrences in an infinitesimally small differentiable area (Box-Steffensmeier, Jones 2004). This can also be seen by expressing *f(t)* in terms of probability. The ***probability density function*** for duration, which is the probability of having experienced the event in the infinitesimally small area bounded by *t* and $t+\Delta t$, may be written as:

$$f(t) = \lim_{\Delta t \to 0} \frac{P(t \leq T \leq t + \Delta t)}{\Delta t} \qquad \textbf{(9.3)}$$

The density function is an unconditional failure rate (demonstrated in equations 9.2 and 9.3) and both *F(t)* and *f(t)* can be used to specify the distribution of failure times.

The ***survival function***, *S(t)*, denotes the probability that a survival time *T* is equal to or greater than time *t*. This means that it denotes the probability of not yet having experienced the event at time *t*. In mathematical terms the survival function is given as:

$$S(t) = P(T \geq t) = 1 - P(T < t) = 1 - F(t) \qquad \textbf{(9.4)}$$

The survival function is an important concept in event history analysis. At the origin time (*t=0* and *S(0)=1*) all the units in the analysis are surviving. As time passes, the proportion of surviving units must decrease as units in the study fail. Clearly, *S(t)* is a strictly decreasing function and theoretically when one analyses a sample in which all the individuals experience the event then: $\lim_{t \to \infty} S(t) = 0$. The number of individuals who have not yet left the origin state up to time *t* is termed the "**risk set**", i.e. the set of individuals who remain exposed to the risk of experiencing the event under study (Blossfeld, Rohwer 2002).

The relationship between failure times and the survival function is captured through the ***hazard rate***, which is defined as:

$$h(t) = \frac{f(t)}{S(t)} = \lim_{\Delta t \to 0} \frac{P(t \le T < t + \Delta t / T \ge t)}{\Delta t} \qquad \textbf{(9.5)}$$

where $P(t \le T < t + \Delta t / T \ge t)$ indicates the probability that the event occurs between the time t and $t+\Delta t$ given that the event did not occur prior to time t. Thus, the hazard rate is a *conditional* failure rate and it donates the rate of failure per time unit in the interval $[t, t+\Delta t]$, conditional on survival at or beyond time t. This rate may be increasing such that the likelihood of failure augments as time passes, or the rate may be decreasing such that the likelihood of failure declines as time passes. It should be noted that the continuous-time hazard is not a probability. "Instead, it is a *rate*, asserting the conditional probability of event occurrence *per unit of time*" (Singer, Willett 2003: 474).

The hazard rate, survivor function, and distribution and density functions are mathematically linked, thus if any one of these is specified, the others are determined.

Cumulative hazard rate (cumulative intensity function) can also be termed the integrated hazard rate and denotes the pseudo-probability of having experienced an event if an individual was constantly at risk (Lelièvre, Bringé 1998):

$$H(t) = \int_0^t h(x)dx \qquad \textbf{(9.6)}$$

To sum up, the variable T in event-history analysis has a quite specific meaning since it denotes the duration of an episode and the mathematical concepts are intended to describe a process evolving over time (Blossfeld, Rohwer 2002). While analysing such a process, a group of individuals are referred to who are seen as "bearing the process" (Blossfeld, Rohwer 2002: 35). These individuals evolve over time and their behaviour generates the process.

9.1.2 Main types of approaches to survival modelling

Three main types of approach can be distinguished – methods of non-parametric analysis, parametric analysis and semi-parametric analysis. According Lelièvre and Bringé`s (1998) overview the main distinctive features of each type of analysis are:

Non-parametric methods provide an initial series of results regarding differences in patterns of behaviour. These methods make no assumptions about the distribution of the event(s) studied. The data is not fitted to any known distribution. This approach extends the possibilities of methods used in standard longitudinal analysis as it allows several interacting phenomena to be studied. Unlike the standard method it provides variances for the estimators.

This method of analysis is comparable to life table techniques and two core techniques are employed: the Kaplan-Meier Estimator and the Actuarial (Life Table) Estimator.

These non-parametric methods provide information about the timing of the event and differences in timing when comparing two or more subgroups. However, the aim of the analysis usually goes further and the impact of different covariates on the process under study is analysed. Therefore, regression models were developed and "are based on the idea (equation) of explaining the risk of undergoing the observed event at a particular time interval (explained variable) with the aid of certain characteristics (explanatory variables)" (Rychtaříková 2009: 38). These methods allow both the introduction of the impact of duration and an estimation of the effect of covariates on the transitions studied by applying regression methods. Two types of hazard models[50] can be distinguished – semi-parametric and parametric models.

The two methods differ from each other with respect to the treatment of the time dependence of the hazard rate. **Parametric methods** impose a known statistical distribution (e.g. exponential, logistic, gamma) on the observed survival distribution. Well-known models include the exponential model, the Weibull model, the Gompertz model and the log-logistic model (Vermunt 1997). Some models also make assumptions about the influence assigned to individual characteristics.

Semi-parametric methods eliminate the need to model the duration effect using known distributions by adopting a baseline hazard rate that is estimated non-parametrically. In 1972, Cox introduced an original model that combines both the regression and life table analytical methods and this model is considered to be "the introduction of dynamics into regression, or alternatively, a method for measuring the impact of covariates in transition and risk analysis" (Lelièvre, Bringé 1998: 109). The impact of the variables is proportional to the risk of experiencing the event; therefore the Cox model belongs in the **proportional hazard models** category.

Generally, there are many types of hazard models and for the purposes of this study **proportional hazard models** will be employed to handle some of the main research questions. In the proportional hazard model the effect of covariates on the hazard of occurrence is multiplicative. The general formulation is:

$$h(t) = h_0(t) \exp \beta x(t) \qquad \textbf{(9.7)}$$

where $h(t)$ is the hazard of occurrence at time t, $h_0(t)$ captures the baseline hazard duration dependence and $x(t)$ are the values of a set of covariates. Covariates can be both constant and varying in time. β represents parameters describing the effects of covariates which shift the baseline.

[50] The hazard rate is generally used as the dependent variable in event history models – these regression models are called hazard rate models or simply hazard models. However, other dependent variables can also be specified. Models known as accelerated failure-time models/accelerated life models consist of regression models applied to the log of the survival time (Vermunt 1997).

This model could also be written as:

$$\ln h(t) = \ln h_0(t) + \beta x(t) \qquad \textbf{(9.8)}$$

The event history analysis which makes up the key content of chapters 10 and 11 employed the piecewise linear exponential model. Particular models and their specifications are described in places in which this analytical procedure is employed. The main principles of this particular model are outlined in this chapter.

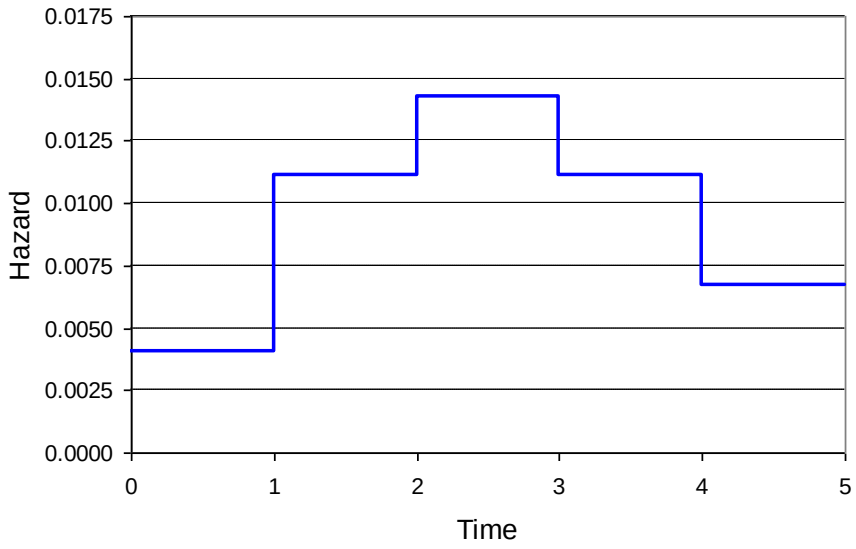
The exponential model is the simplest parametric hazard model which assumes a time-constant hazard (and exponential survival function). A possible extension of the somewhat restrictive exponential model consists of piecewise constant exponential models in which the hazard rate is assumed to be constant within time intervals but differs between intervals.

Suppose the time axis is divided into J intervals (0, t1], (t1, t2], ... (tj-1, ∞], where the intervals are specified by the analyst. Within each interval it is assumed that the baseline hazard is constant.

$$h_0(t) = \begin{cases} h_1 & \text{for } t \text{ in } (0, t_1] \\ h_2 & \text{for } t \text{ in } (t_1, t_2] \\ \ldots & \\ h_j & \text{for } t \text{ in } (t_{j-1}, \infty] \end{cases} \qquad \textbf{(9.9)}$$

Thus, the hazard rate is a step function.

Figure 9.1 Piecewise constant model – hazard rate



The piecewise linear specification of time dependence is a variant of the above piecewise constant specification since the hazard rate varies linearly within intervals.

$$\ln h_0(t) = y(t), \qquad \textbf{(9.10)}$$

where y(t) is the logarithm of the linear spline function.

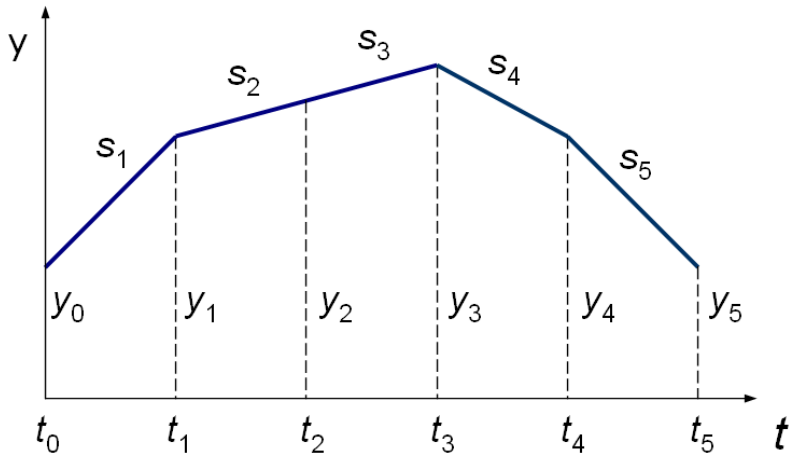
The linear spline function can be defined as (Kulu 2006):

$$y(t) = y_0 + \sum_k s_{k+1} y_k(t) \qquad \textbf{(9.11)}$$

$$y_k(t) = \begin{cases} 0 & \text{for } t < t_k \\ t - t_k & \text{for } t_k \le t < t_{k+1} \\ t_{k+1} - t_k & \text{for } t \ge t_{k+1} \end{cases} \qquad \textbf{(9.12)}$$

k=0, 1, 2,…

Figure 9.2 Piecewise linear spline



In order to compute the linear spline function it is necessary to know the nodes t_1, t_2,..., the slopes s_1, s_2,..., and a constant y_0. The ordinates can be computed:

$$y_{k+1} = y_k + s_{k+1}(t_{k+1} - t_k) \qquad \textbf{(9.13)}$$

The spline function value between points (t_k, y_k) and (t_{k+1}, y_{k+1}) can be computed:

$$y(t) = y_k + s_{k+1}(t - t_k) \qquad \textbf{(9.14)}$$

The piecewise linear specification provides a very flexible function to represent the shape of the baseline hazard.

9.1.3 Event history analysis in Czech socio-demographic literature

After having discussed the basic methods and principles of event history modelling techniques this part of the study summarises both the topics involved in and the authors who use the event history approach when analysing socio-demographic issues in the Czech context.

One of the topics which have been studied by Czech authors and in the context of the Czech population using event-history analysis is ***transition into adulthood***. The transition from education to work signifies an important change in the life conditions and life experiences of young adults. The same is true for the formation of unions and entry into parenthood – especially in the changing economic and societal conditions that have characterised the Czech Republic in the past 20 years.

The fact that the education, work and family careers of young adults in the 1990s did not follow the same stable and highly predictable patterns of the careers of young Czechs entering adulthood in the 1970s and 1980s was used by Kantorová (2004a,b) as an interesting setting for studying transitions to first union and first childbirth. In her analysis, explicit attention was devoted to the role of women's education and employment and she compared two historical periods: the state socialist period of the 1970s-80s and the social and economic transformation of the 1990s.

Hamplová (2003) analysed the relationship between partnership formation and women's education. In her article, education served as a proxy for cultural capital and earning potential and its expected significant role in partnership formation was studied.

The work of another Czech author Michal Škop (2005) had two main goals. Apart from an effort to prepare a summary and description of modern modelling approaches employed in the field of demography for a Czech audience (in Czech) he focused his analytical work on the process of leaving the parental home in the Czech Republic. Similarly to Kantorová and Hamplová he analysed Czech women born between 1952 and 1982 from the Fertility and Family Survey data set (carried out in 1997).

Paloncyová (2002) used the event-history approach on her own biographical survey data "A biographical survey of the young generation 2002" which focused on the life careers of young Czech people born between 1968 and 1977, namely with regard to starting a partnership and marriage, educational career, entrance to the labour market and professional career.

The second most frequent subject of event-history analysis is ***fertility.*** In addition to the afore-mentioned studies that dealt with the entry into parenthood and thus often with entry into motherhood (Kantorová 2004a,b, Paloncyová 2002), third births were studied by Pikálková (2003). She focused on an analysis of the conditions and context surrounding the birth of a third child and namely on the relationship between the likelihood of the birth of a third child and the level of education of the mother. As with the vast majority of the afore-mentioned authors, she used data from the Family and Fertility Survey since, during the 1990s and the beginning of the 2000s, this was one of the few available data sources which allowed this type of analysis to be performed.

Šťastná (2005a) focused on the individual context of parenthood in the Czech Republic and studied entry into parenthood and higher-order births with respect to the micro-social context such as the length of education enrolment, leaving the parental home and the beginning of an independent life and entering the labour market.

A third topic which has recently emerged in the work of Czech authors using the event history approach is the issue of ***divorce***. Zeman (2003) analysed the process of divorce and marital dissolution not only in the Czech Republic but also in Austria. Attention was devoted to premarital cohabitation and its role in subsequent marital stability. Marital disruption is further studied within the context of the previous life-course and notably with regard to the consequences of leaving the parental home and union formation.

Šťastná (2005b, 2006) focused her analysis of divorce behaviour on a specific issue – the intergenerational transmission of divorce. Given the fact that an increasing proportion of children in the Czech Republic live part of their childhood in lone-parent or reconstructed families, the author decided to study the effect of parental divorce on the subsequent dissolution of the first partnership and marriage of the offspring.

9.2 Type of data required for studying life histories

Studies on the association between various life events remained the domain of qualitative sociological research for many years since it was possible to work with the detailed life histories of a small number of respondents. In demography, longitudinal analysis is based on the study of the occurrence over time of a demographic event (birth, death, marriage, divorce etc.) within a defined and homogenous group or cohort. Event history analysis methods were developed in order to study the occurrence of one or more interacting demographic phenomena and to involve simultaneously a large number of individual characteristics. The methodology of event history analysis was first introduced in the 1970s and has been widely applied since the 1980s in the fields of sociology, demography, economics and biostatistics (Lelièvre, Bringé 1998). The analysis of the life-course of an individual and an examination of the timing of and sequence in which various events occur became increasingly feasible at this time due to the rapid development of statistical methods and information and computer technologies. At the same time the availability of quantitative data of a certain quality was essential and the use of both prospective and retrospective data collection allowed the construction of detailed life histories.

In order to understand how earlier events influence a person's present and future life, to understand the process by which various changes in life occur and to conduct an analysis that involves heterogeneity among populations and interactions between demographic phenomena, it is essential to have accurate information on both the past and the present; thus longitudinal data, which provides chronological information (i.e. the history of life events), is required. Therefore it is necessary to use data collection methods that track a group of individuals throughout their life histories (or at least part of them) and that provide the greatest number of individual characteristics possible.

In general, a complete set of biographies for the whole population is difficult to obtain; therefore data obtained from sample surveys is often employed. Before undertaking event history analysis it is necessary to consider requirements concerning data quality and to compare different potential data sources and evaluate their advantages and disadvantages. This section therefore provides a specification of event history data and an overview of the various types of data sets required.

Event-history analysis, as the term implies, focuses on events in the life course that refer to changes in a given stated variable. If a variable expresses distinct marital status, for example, events that are relevant to study consist of marriage, becoming divorced or widowed and remarriage. Questionnaires used to obtain "event history data", which record the precise timing of transitions in and out of various states, must be constructed in order to collect information on diverse events and the exact dates of such events in particular (e.g. when studying the process of family formation, any and all information on age at graduation, professional career, start of relationship with a partner, cohabitation, marriage, birth of first child is relevant). For measurement in standard time units (months, years, in some cases even days or hours, etc.) the same unit should be used throughout the questionnaire.

The key feature of event-history data is that it provides information on the duration of each state of the life course studied, such as how long a person is single, cohabiting, married, divorced or widowed. Event history data is often collected using an event history questionnaire filled in during an event history interview; the collection of events, their timing, their duration, and their sequence is essential. However, the specialised event history interview is not the only means by which the researcher compiles the appropriate data set; indeed, such data could be drawn from other sources and research projects provided a good knowledge and understanding of the basics of event-history methodology and interviewing is secured.

The ideal setting for such analysis would be to achieve complete coverage of the population concerned which is typical of population and housing censuses. Such censuses represent one of the pillars of data collection on the number and characteristics of the population of a country but, on the other hand, typically provide only a very limited number of questions concerning the biography of individuals[51].

A further type of data which provides complete coverage of the population concerned is the population register, data from which, provided that a population register exists in a given country and is administered efficiently, is very useful for the purposes of event history analysis. In general, registers contain information on births, marriages, divorces and deaths, frequently also information on migration which modifies the population size and structure in the various

[51] For example, the Czech population and housing census contains questions on the mother's place of residence at the time of birth and on the place of residence of the individual one year before the census. Based on these questions, it is possible to analyse migration to a certain extent but the structure of the questions ignores other details concerning migration (e.g. date of migration, information on multiple removals and eventual return to the original location). In addition, this information cannot be placed in the context of other life events (work and family), therefore it makes it impossible to study for example a possible link between migration and changes in family situation or economic activity.

administrative units. The main disadvantage of register data is that many important life-events are not covered in the data set, including partnerships that were not legalised and professional career. Moreover, population registers exist only in a relatively small number of countries and are constructed in the main for administrative rather than research purposes. Moreover, in cases where the system is not fully centralised, it is very difficult to follow an individual's life path through the various locations in which he/she lived.

In countries that do not have registers of this type, it is necessary to carry out sociological surveys in order to obtain the appropriate event-history data. Such surveys are useful even in countries that have population registers since it is possible to capture other relevant life events and focus on specific research topics by using topic-centred questionnaires. In principle two main types of survey exist: prospective (working forward in time) and retrospective (working backward in time) surveys.

The **prospective study** (panel study) follows a group of similar individuals over time in order to study developmental trends and life events throughout lifetimes or generations. For example, such a study could follow a cohort of children born in a given region and at a given time who vary in terms of legitimacy (marital versus extra-marital births) in order to study how these children develop and how their future demographic behaviour is influenced by early-life experiences.

The example provided is a type of longitudinal cohort study that samples a cohort typically defined as a group experiencing one event in a selected time period (birth cohort, wedding cohort, cohort of graduates from university etc.). However, longitudinal panel study sampling is usually cross-sectional and covers many generations; and the same sample of respondents is studied at different points in time. Both types of prospective study are able to reveal shifting attitudes and patterns of behaviour that might remain unnoticed when employing other research techniques. Depending on the purpose of the study, either a continuous panel that consists of members who report specific attitudes or behaviour patterns on a regular basis or an interval panel, whose members agree to complete a questionnaire when the information is needed or on an irregular basis, can be used.

In addition to the high costs involved and the enormous time demand, the main drawback of prospective studies is the statistical problem that occurs because of panel attrition or non-response. Because panel attrition is not random (Scott, Alwin 1998) this may seriously affect the representativeness of the panel survey. A further speculative issue concerning prospective survey design is whether interviewing the same people over time could affect the essence and quality of their answers. It is argued that due to the panel effect an individual could change his/her behaviour or opinions because of the influence of previous social investigation (e.g. evidence of the panel effect can be found in election or TV study panels).

A further drawback of this type of data collection is that in order to study intergenerational change prospectively a panel study of considerable duration is required, whereas such data can be collected relatively quickly using a cross-sectional retrospective research.

The **retrospective study** is a longitudinal study which basically collects data from the past and does not follow respondents as is the case with prospective studies. Respondents are asked only once in order to obtain retrospective information about the events being studied.

Possible disadvantages potentially relate to the method of data collection. Firstly, the representativeness of the sample may be distorted by the fact that during investigation specific groups cannot be reached once they have moved or died and only the "survivors" can be interviewed. With regard to numerous phenomena, death or emigration are not considered independent variables - such as, in an analysis of partnership and marital behaviour, it is evident that a severe disease or disability increase the risk of death and, at the same time, probably decrease the likelihood of marriage.

Secondly, difficulties may result from poor quality data caused by respondents being unable to remember events and the consequent reliability of recall data. In other words, the precise reporting of the timing of each event obtained from retrospective surveys might well be affected simply by the poor memory of respondents[52]. In this type of survey it is not uncommon that the oldest group of respondents is asked about life-events that took place more than fifty or sixty years before. Therefore it has to be taken into account that the reliability of the human memory decreases with increasing time elapsed since the event and also that some of the data might be inaccurate and some events completely forgotten.

The prospective and retrospective approaches to collecting event history data are often contrasted but, whatever the arguments, both are indispensable. Retrospective event history data may provide quite reasonable information concerning the timing of events being studied which can subsequently be used to analyse the impact of the timing of certain event on different life domains. But if the researcher proposes to include aspirations, plans or value orientation in the study, the retrospective design is often insufficient. Rationalisation, denial and other psychological mechanisms which reconcile people with their fates are likely to influence people's perceptions of their past aspirations (Scott, Alwin 1998).

The retrospective design is usually able to cover a longer time span than the prospective design and nearly all social surveys ask for information on the distant past (e.g. place of birth, level of education, family of origin). However, prospectively collected data sets are generally considered to be more reliable with regard to specific types of information than recall data because of possible bias and the limitations of the human memory (Scott, Alwin 1998). Therefore some surveys are designed to be prospective but with an important amount of information collected retrospectively, especially in event history research which, by definition, analyses events that happened in the past.

[52] In Belgium it was possible to compare survey data with data from the national population register. This comparison showed that even though errors in the dating of events were common in the sample survey data set, the reported sequence of the live-events of individuals was correct. This comparison verified, however, that the influence of erroneous dates on the results of both parametric and nonparametric analysis is not important given that the precondition of the correct sequence of consecutive life-events is fulfilled (Lelièvre 1992).

The **repeated survey** is a type of prospective investigation in which it is not necessary to observe an individual directly since he/she is exposed to the risk of the event and such observation does not necessarily cease when the occurrence of the event is no longer relevant to the individual. With this type of research design it is necessary to collect retrospective life history data in the first wave of surveys in order to capture the existing sequence and timing of major life events. In the first wave of the survey, the respondent is observed prospectively in given time intervals and all the events experienced over the course of time are recorded. Under such conditions the information obtained covers all the important events of interest experienced by an individual up to the date of the last round of interviews.

The advantage of this type of research design is the potential it offers to cover not only objective life events but also subjective wishes, plans or aspirations which are often modified by the individual throughout the life course according to changing experiences, circumstances and living conditions. Data used in this book originates from this type of research project and is described in detail in the following chapter.

10. Study of the determinants of having a second child - second birth risk, method of analysis

Event history analysis methodology is used in the next section to investigate the determinants of having a second child. The object of study of event history analysis is the individual, more specifically the life course of the individual. Using this methodological approach it is possible to study the sequence of socially defined events and roles that the individual undergoes during his/her lifetime. It allows the study of how a particular event (whether of a family, economic or other nature) experienced by an individual changes the probability of another event happening over his/her lifetime.

In this study the author is interested in selected events that women experience and especially in factors which affect the timing and occurrence of a particular event - second childbirth. For this method of analysis, specific data is required. The sample used for the analysis, the analytical approach applied and the covariates are described in the following section.

10.1 Sample selection

Analysis is restricted to respondent women no older than 54 years at the time of the interview. Selected cohorts consist of women who had already had a first child and who could, therefore, potentially have had a second conception in the 1970s, 1980s and the beginning of the 1990s.

Analysis is interested in the event of second birth (in a data set expressed in the month and year of birth). The date of second childbirth is backdated by nine months to obtain an approximate date of conception. The important distinction between a second pregnancy event and that studied herein is that only those pregnancies that resulted it the birth of a second child are included; the author has no information on second pregnancies which ended in abortions or miscarriages. Backdating by nine months is employed since events that occurred after conception might have been influenced by the conception itself (e.g. changes in partnership status or the abandonment of education due to the pregnancy; admittedly, changes in education enrolment would be more likely following first conception).

Second conception is studied from the date of birth of the first child (i.e. the baseline is the age of the first child measured in months). Because of prevailing pattern of relatively short intervals between the first and the second birth the author censored cases 15 years after the first child was born or at the age of 50 or at the date of sterilisation (if reported) or when interviewed, whichever occurred first).

Only the records of female respondents who had at least one surviving child were selected for the analysis of the second birth. The author excluded all cases where the first conception occurred before the age of 15 or where the respondent was over 40 years of age at first birth

since the childbearing behaviour of these women (both very young and older) is likely to be significantly different from the rest of the sample. Furthermore, cases with incomplete information on the years of birth of first and/ or second child, on the educational attainment of the subject as well as those cases where it was not possible to reconstruct the partnership history were excluded as were those cases where the respondent had an adopted first child of had foster or step children. Finally, women for whom a first birth was twins were also omitted from the multivariate analysis since it was not possible to calculate a positive duration of the process time in such cases.

Table 10.1 Number of cases included and excluded from analysis of transition to second birth, GGS, Czech Republic female birth cohorts 1951-1987

Number or respondents from cohorts 1951-1987	3 402
Number of respondents with one or more children	2 286
Excluded cases:	
Adopted/fostered children or stepchildren	39
First child conceived before the 15th birthday of respondent	3
First child born after age	2
Twins at first birth	47
2nd child born less than 7 months after the 1st child	3
Excluded due to missing:	
Date of birth of child	63
Date of union formation/dissolution	63
Absolute number of excluded cases	220
Number of respondents	2 066
Number of second births	1 366

The remaining second births sample therefore comprises 2 066 women who gave birth to 1 366 second children (see Table 10.2 and 10.3). The first women in the sample was at risk of an event in 1969 (April) i.e. the date on which the first child (parity one) was born.

Table 10.2 Composition of the sample for the analysis of a second birth, time constant covariates

Time constant covariates	Occurrences	Exposure		Number of respondents	
		person months	per cent	absolute	relative
Birth cohort					
1951-1955	254	22 068	17.3	331	16.0
1956-1960	249	25 154	19.8	345	16.7
1961-1965	275	26 730	21.0	373	18.1
1966-1970	273	23 779	18.7	363	17.6
1971-1975	220	21 798	17.1	384	18.6
1976-1980	88	6 790	5.3	220	10.6
1981-1987	7	1 032	0.8	50	2.4
Number of siblings					
None	130	18 536	14.6	244	11.8
1 sibling	571	57 977	45.5	912	44.1
2 siblings	387	30 518	24.0	536	25.9
3 and more siblings	278	20 319	16.0	374	18.1
Divorce of parents before age 16					
No	1 130	104 152	81.8	1 692	81.9
Yes	159	16 530	13.0	262	12.7
Other/Missing	77	6 668	5.2	112	5.4
Religion					
Participation at religious services at least once per month	136	10 783	8.5	192	9.3
Participation less often/ no participation	1 230	116 566	91.5	1 874	90.7
Age at first birth					
Rather young	452	34 140	26.8	569	27.5
Medium	666	56 366	44.3	947	45.8
Rather old	248	36 844	28.9	550	26.6
Total	1 366	127 349	100	2 066	100

Table 10.3 Composition of the sample for the analysis of a second birth, time-varying covariates

Time varying covariates	Occurrences	Exposure	
		person months	per cent
Education			
In education	62	6 406	5.0
Out of education:			
Basic	206	17 861	14.0
Secondary /without school-leaving exam at age 18/19	500	44 051	34.6
Secondary/school-leaving exam at age 18 /19	459	43 694	34.3
Tertiary	139	15 338	12.0
Partnership			
Single	77	12 629	9.9
Cohabitation	72	8 142	6.4
Marriage	1 185	90 779	71.3
Divorced/separated/widowed	32	15 799	12.4
Number of partnerships			
1	1 204	93 454	73.4
2	53	5 467	4.3
Out of union	109	28 428	22.3
New union/partner			
Yes	115	9 067	7.1
No	1 142	89 855	70.6
Out of union	109	28 428	22.3

10.2 Analytical procedure

Event-history techniques are employed to estimate the transition to second birth and the period of time from the birth of the first child is used as the baseline hazard in all the models.

In the first stage, the second birth model is estimated separately with the next stage addressing the question of whether any selection effect could be detected amongst Czech women. In order to investigate this issue, the author proceeded in a manner suggested by Kravdal (2001) and first and second birth probability was estimated from a joint model to which a common unobserved heterogeneity factor was added.

In mathematical terms, the specifications for first (1), and second (2) births are as follows:

$$\ln h_i^{(1)}(t) = y^{(1)}(t) + \sum_j \beta_{1j}^{(1)} x_{ij} + \sum_k \beta_{2k}^{(1)} w_{ik}(t) + \varepsilon_i \qquad \textbf{(1)}$$

$$\ln h_i^{(2)}(t) = y^{(2)}(t) + \sum_j \beta_{1j}^{(2)} x_{ij} + \sum_k \beta_{2k}^{(2)} w_{ik}(t) + \varepsilon_i \qquad \textbf{(2)}$$

For the transition to the **first child,** $h^{(1)}(t)$ is the hazard of occurrence at time t; $y^{(1)}(t)$ is the baseline hazard. The baseline duration used is age, measured from when the woman turned age 15. For the transition to the **second child**, $h^{(2)}(t)$ is the hazard of occurrence at time t; $y^{(2)}(t)$ is the baseline hazard. The baseline duration consists of the time since the first birth (i.e. the age of the first child).

In both equations, x_{ij} form the time constant covariates and w_{ik} the time varying covariates; β_1 and β_2 represent respective coefficients for the effect of the time constant and time varying covariates on the log risk of a first and a second conception.

The symbol ε represents the unobserved heterogeneity factor that is the same for both birth parities. ε is assumed to be normally distributed with mean 0 and a variance of $\sigma 2$. This means that the correlation between the unobserved heterogeneity components of the transitions to the first and second child is examined.

The baseline log-hazard is a piecewise-linear spline (also known as a generalized Gompertz function). Parameters are estimated using aML software (Version 2.09). This software allows the insertion of continuous covariates (in this case a woman's age at first birth and period) as a piecewise linear functions. A linear spline is a flexible way of representing the effect of a continuous independent variable. Apart from using a log baseline and one or more covariates represented as a linear spline, aML also allows for interaction between exploratory variables and to control for unobserved heterogeneity (for more details, see Lillard and Panis 2003).

Data preparation involved the use of Stata statistical software.

10.3 Description of covariates

Using a set of covariates, several analytical models were developed focusing on the determinants of having a second child in Czech society. The controlled variables expected to influence fertility behaviour with regard to a second child were drawn from both theory and empirical research. Several time constant (social background characteristics – number of siblings, parental divorce, religious belief, respondent's age at first birth) and time varying covariates (which are allowed to vary over the process time - educational attainment, partnership status, period) were introduced.

The following section outlines the covariates included in the analytical models and provides a hypothesis concerning their respective influence and relevant to empirical evidence.

10.3.1 Time constant covariates

Age at first birth

Age at first birth and changes thereto are particularly important because of the potential room or lack thereof that is left for higher order births (Frejka, Sardon 2006). Changes in the age patterns of first birth reflect numerous social processes. The age of transition to parenthood could be influenced by changes in the educational and employment systems, changes in other

material related domains (such as the availability of housing or changes in public and family policy), as well as changes in the system of social norms, values and attitudes.

Female age at first childbirth is an important variable from the point of view of fertility decline analysis since postponing having a family to older age has contributed to a great extent towards the present birth rate decline. Sobotka, Lutz and Philipov (2005) revealed the strong impact of the tempo effect since 1994 in the Czech Republic where the number of births has been negatively affected by tempo distortions.

In an attempt to capture the effect of age patterns of first childbearing, the author introduced a covariate age at first birth. However, with conventional absolute age grouping it is possible that the different social meanings of age at first birth for different educational groups will be neglected. Having a first child after the age of 27 has an entirely different social meaning for university graduates than for women with only a basic education. B. Hoem (1996) pointed out the relevance of using age at birth relative to the level of education at childbirth. She suggested it would be better to group the age variable differently for women of different educational levels in order to reflect usual ages at first childbearing in each educational group taken separately. The effect of age must depend on its social meaning among a person's peers and not on its average meaning in the population as a whole (Hoem 1996: 334).

Therefore in addition to absolute age the author also defined covariate relative age at first birth in terms of three categories: rather young, medium, rather old. Women's ages at first birth were divided into quartiles for each level of education and this grouping was as the corresponding age variable in the analysis.

It was assumed that women who had their first child much later than other women with the same level of education would have the lowest risk of having another child, whereas those who became a mother relatively early were considered more family-prone and therefore more likely to have a second child.

Religion

Czech society became highly secularised during the twentieth century. In the period 1948-1989, during which the communist regime with its anti-religious ideology isolated churches and religious symbols, the proportion of religious people in the Czech population dropped considerably; church attendance declined and the proportion of children who underwent a religious education fell drastically (Hamplová 2001).

This trend continued even after the political changes of 1989. Support for traditional religion remains low and, indeed, the Czech Republic has one of the lowest proportions in Europe of those professing a certain confession or attending church regularly (Hamplová 2000a). Although from the point of view of church attendance, Czech society can be described as highly secularized, it has, nonetheless, a relatively strong religious potential which could only manifest itself after the collapse of the communist regime (Hamplová 2001).

In the 1991 Population Census 44 per cent of inhabitants declared some religious affiliation, in the 2001 Population Census the number had fallen to only 32 per cent most of whom (83 per cent) declared an affiliation to the Roman Catholic church (CZSO 2005).

Generations and Gender Survey data confirmed the secularization of Czech society revealing that only 10 per cent of those aged 18-79 years attend church weekly or monthly.

Nevertheless, membership of a religious community tends to result in both different values and lifestyle and positively influences the number of children in the family (Fialová et al. 2000). Pikálková (2003) argues that after a woman's educational level the greatest influence on the risk of having a third child is connected with religious belief[53].

Therefore the covariate describing whether the respondent is religious, i.e. whether she regularly attends a religious service (at least once a month) was introduced. It is assumed that being religious is a stable personal quality and therefore the fact that evidence is available only from the time of the interview should not distort the overall results. It is assumed that being religious has a positive impact on the risk of a second birth.

Parental home in childhood

Early life course experiences often have a significant impact on partnership and fertility behaviour. In socialistic Czechoslovakia social networks had a very strong impact on individual lives and events in early adulthood. Kučera (1994) argues that in conditions of limited opportunities for emancipation via education or professional career, early marriage was in many cases the first independent step for young adults. However the formation of a family and the inherent self-realization did not necessarily imply financial independence.

Weak state housing policy which resulted in a severe lack of housing for young couples and families meant that many young families had to wait several years for their first apartment and were forced by circumstances to live in three-generation extended family households. Such families often obtained their first independent housing after they had completed finished the reproduction cycle and had already the desired number of children (Kučera 1994: 66). Moreover, due to the traditionally low level of migration of the Czech population, a young family usually lived in close proximity to one or both sets of parents who often assumed an important childcare role.

Musil (1971:205-206) argues, based on the analysis of the Czech family system and the organisation of the family, that in socialist countries the social and economic conditions influencing the running of a household and the organization of childcare, combined with a high rate of female employment, strengthened the social function of kinship. Therefore, in the Czech context the sociological forecast of a rapid change in terms of the family into small, nuclear and conjugal type did not prove correct.

[53] Pikálková analysed a sample of Czech women born between 1952-1982 using respondents from the Family and Fertility Survey carried out in the Czech Republic in 1997. According to her results women who attend religious services at least once a week have a 2.37 times higher risk of a third birth than those who attend services less often or not at all (results controlled for educational level, cohort, covariates describing family background, age pattern of previous births and partnership status).

Therefore, when measuring the impact of family background it was decided to include covariates describing the size of the family of origin and the relationship of the parents of the subject – whether they were divorced/separated or whether the respondent spent her childhood in an intact family. The reasoning of these two covariates is as follows.

Number of siblings

Empirical studies documented that, indeed, the size of the family of origin influences the fertility behaviour of women and their transition to motherhood. Women who were brought up in larger families enter to motherhood more rapidly than women from smaller families who tend to delay the transition to first birth. For Czech women this pattern was proved by Kantorová (2004b) by discovering a positive relationship between the number of siblings and the intensity of entry into motherhood for Czech women born between 1952 and 1982.

Orientation towards a two-child family has been a characteristic trend of Czech society for many years; the idea of a two-child family persists and remains strongly established even for younger generations. Accentuating the aspect of socialisation, the number of siblings a woman has may influence her subsequent family trajectory and reproduction behaviour. Women from larger family might reasonably be expected to benefit more from kinship support, more frequent family contact and a wider social network than their counterparts from smaller families. From this point of view it is assumed that women with a high number of siblings have a higher tendency to establish larger families and therefore exhibit a higher second birth risk than women with no siblings.

Parental break-up

The author introduced a covariate characterizing the family of origin and parental break-up in order to investigate a potential influence on fertility. Many empirical studies have documented the impact of experiencing parental divorce on various demographic processes.

Amato (1996) argued that parental divorce affects three types of offspring outcomes: life course and socioeconomic variables, attitudes towards divorce and problematic interpersonal behaviour. In relation to the first category, life course outcomes were deemed to be young age at marriage, cohabitation prior to marriage and low socioeconomic attainment.

Empirical studies supported this conceptual model. The children of divorced partners have a greater knowledge of the alternatives to marriage; they display a higher propensity to cohabit before marriage than do children from intact families (Bumpass, Sweet, Cherlin 1989, Thornton 1991, Manting 1994). Parental family discord raises the relative risk of leaving the parental home (Pfeiffer, Nowak 2001); children from disrupted families where at least one of the parents has a new partner leave the parental home sooner than do their counterparts with a stable parental relationship (Courgeau 2000). Such children also tend to marry earlier (Glenn, Kramer 1987, Keith, Finlay 1988, McLanahan, Bumpass 1988, Thornton 1991).

In the Czech context Zeman (2003) argues that women who experience parental family discord tend to live independently after leaving the family home and to cohabit before marriage; moreover, their own marital unions display a higher risk of dissolution.

In order not to mismatch two events in case where parental divorce occurred at a time when a child had already reached adulthood and could have her own family, a covariate was created dealing specifically with the age of the child at parental break-up. Therefore the study distinguishes between parental break-up happening before or after the age of 16 / never.

However, the role of parental divorce in the second conception decision-making process is not clear. One assumption might be that women who have experienced parental discord ending in separation would try harder to establish harmonious relationships within their own family and therefore will have a higher propensity to have more than one child. The counterargument, based on empirical results, accentuates the role of alternative forms of partnership[54] and the fact that such women are more prone to marriage breakdown and divorce (Šťastná 2005b). Alternatives to marriage, cohabitation or living without a partner are thought to have a negative effect on childbearing in general and on the risk of a second birth in particular. Therefore it is assumed that having divorced parents in childhood reduces the risk of transition to second birth.

10.3.2 Time varying covariates

Educational level

The first wave of the GGS does not cover complete education histories and provides only information concerning the highest educational level at the time of interview and the calendar time (month and year) of completion of this level. Education as a time-varying covariate was constructed from this information. Respondents who were studying at the time of the interview (main socioeconomic status was student) were coded as being in education. In other cases respondents were coded as being in education up to the time they attained the reported educational level. After the date of completion of their education, respondents were coded as having left education and were divided into four groups according to the educational level they reached.

A distinction is made between respondents with "basic" (uncompleted or basic education only – compulsory education lasting 8/ 9 years) education, "secondary" (apprenticeship or secondary) education without the school-leaving exam at age 18/19 ("*maturita*"), "secondary education with the school-leaving exam at age 18/19" including follow-up courses and "tertiary" (higher technical colleges including conservatoires and universities) education.

The author supposed a significant influence of educational level on the fertility patterns of Czech women, especially among highly-educated women. As Kantorová (2004a) showed, following 1990 there was an increase in the impact of a woman's education on the timing of entry into motherhood. Women with a secondary education (completed secondary education with the school-leaving exam at age 18/19) or a university degree had comparatively lower first-birth risks than those with lower education levels. Moreover, for university graduates it was evident that the period between the completion of studies and entry into motherhood increased in the 1990s.

[54] For Czech women parental divorce increases the likelihood of cohabitation prior to marriage (Šťastná 2005b, Zeman 2003).

Marital status/partnership status

Having a partner is one of the determinants which influence the second conception decision-making process. According to factorial analysis of the GGS data there are two main factors taken into account in this respect – material and life circumstances (including the financial situation, work, housing conditions, health and child care possibilities) and the partner, i.e. having a suitable partner and the partner's work and health status (Šťastná 2007b). Women with a basic education only and students placed greatest emphasis on the importance of having a suitable partner. More than 90 per cent of women still in education surveyed do not share a household with a partner, although many of them are in a serious relationship, i.e. they have a partner with whom they do not share a common home. They stress the importance of partnership stability in terms of deciding whether to start a family. In contrast, most women with the lowest level of education (three-quarters) share a household with a partner, meaning that for women of lower socio-economic status the perception of the man as the bread-winner of the family is highly important with respect to decisions on family size (Šťastná 2007b).

Moreover, marriage remains an important indicator of values and family-oriented life style. Therefore a covariate was included to distinguish whether the respondent lived alone (single or divorced/separated) or in a marital or non-marital union during each month of observation. It is assumed that the second birth risk for married women is higher than for those in a non-marital relationship and that women in a union will exhibit a higher second birth risk than those living alone.

In order to take into account that fertility in higher-order unions may differ from fertility in a first union the author controlled for the order of the current union and included a variable recording whether the current partner, i.e. the current union was different to the union in which the first child was born. Having a new partner could increase the risk of a further conception (in terms of this study, the risk of a second conception). Empirical findings suggest that a first shared child has a number of knock-on effects for parents and new family, according to literature, the parenthood effect for the new partner, a union-commitment effect for both partners and the sibling effect (Griffith et al. 1985, Vikat, Thomson, Hoem 1999, Buber, Prskawetz 2000).

In the former Czechoslovakia the fertility of remarried women was studied as early as in the 1980s by Kučera (1984) who argued that the total fertility of repeatedly married women was higher than that of first married women (sets of women in comparable age groups) as a result of the relatively frequent additional delivery with a new partner. Women who had entered a new relationship childless or with only one child exhibited the highest fertility in the second union.

It was expected that living in a higher order union with a new partner (other than the father of the first child) increases the risk of a second birth.

Period

In an attempt to capture the effect of different periods in which women were at risk of a second birth, one has to take into account changes in related domains, namely changes in

population/family policy and the profound changes introduced by the changeover to a market economy in the early 1990s. Therefore the author included the calendar-time period as a time-varying covariate and split it into five distinct periods (1969-1975, 1976-1979, 1980-1989, 1990-1996 and 1997-2005). The split corresponds to major changes in family policy and attempts to capture economic changes and changes in the whole of Czech society in the period of transition.

In an attempt to summarize the main changes in family policy (see Chapter 4), higher second birth intensities could be expected during the 1970s following the introduction of a range of pro-natal policy measures which had the effect of shortening birth intervals and promoting the second baby boom generation of the mid 1970s (when the post-war generation was at the age of highest fertility).

While there were no important changes in fertility patterns (number or timing of children) during the 1980s, the 1990s was a period of radical change from the previous model of family behaviour. Between 1990 and 1996 the total fertility rate decreased from 1.89 to 1.18 and later stabilised below this level. The fall in the TFR was accompanied by a significant rise in the average age of the mother from 1993. Therefore one can assume lower second birth intensities especially in the first half of the 1990s.

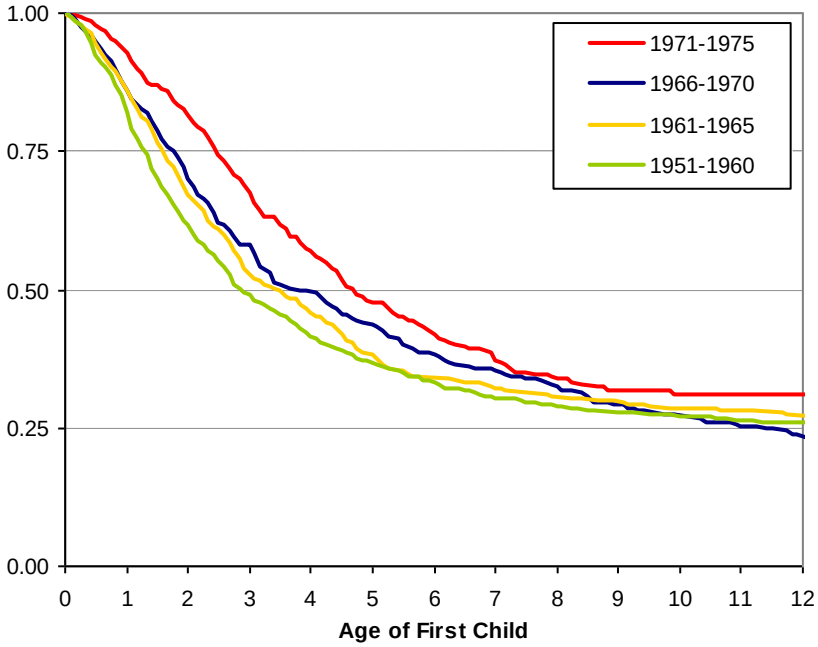
In the analysis presented in Chapter 11 the author has employed two distinct specifications of time. By means of different statistical models, both different calendar periods and different generations of women are analysed. However, since the two time specifications cannot be included in the same model, the main part of the analysis is based on the cross-sectional approach and follows the main historical period over the last four decades. To capture generational shifts, however, Section 11.5 is based on a cohort approach and compares the timing of events between different generations of Czech women whilst controlling for other personal characteristics.

11. Findings and discussion of the results

11.1 Descriptive analysis

The prolongation of the interval between first and second births in the 1990s is reflected in the survival curves for the transition to second child displayed in Figure 11.1. The youngest cohort (1971-1975)[55] compared to that preceding it postponed having a second child; the median age of the first child at the time of second conception was almost 2 years (22 months) higher for women born between 1971 and 1975 than for the 1951-1960 cohort. The biggest difference (11 months) in terms of median time is that between the successive cohorts 1966-1970 and 1971-1975, the first of which still exhibited the early childbearing characteristics of socialist Czechoslovakia compared to the second which was characterised by a postponement of demographic events over the life-course. As far as the 1971-75 cohort is concerned, 50 per cent of women conceived a second child 4.8 years after the birth of the first.

Figure 11.1 Transition to second child, women, birth cohorts 1951-1975 (survival curve)



Notes: (1) Method: Kaplan-Meier survival plot
(2) Dependent time variable: time from the birth of the first child

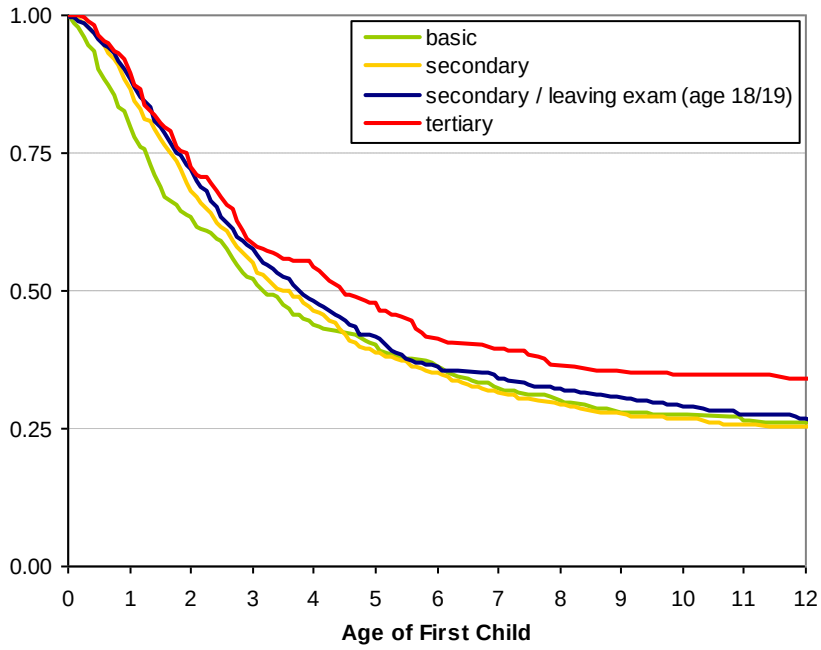
Source: GGS Czech Republic 2005

[55] We do not introduce survival curves for women born after 1976 because of too few cases of second conception and therefore possible selectivity effect. This cohort (1976-1979) will be included in analytical models later.

Transition to a second child by final education level (Figure 11.2) highlights a slightly different pattern for highly-educated women. Within ten years of the first birth, roughly 73 per cent of women with a basic or secondary education have another child; however this figure falls to 65 per cent in terms of women with a tertiary education. In addition, university graduates were found to have a second child slightly later than women with lower education levels. Hence it seems that women with a basic and secondary education prefer to have births separated by closer time intervals than those with higher education levels.

However, event-history analysis using education as a time varying covariate will be used in order to minimize the risk of estimation bias due to anticipatory analysis[56] (Hoem, Kreyenfeld 2006).

Figure 11.2 Transition to second child by final educational attainment, women (survival curve)



Notes: (1) Method: Kaplan-Meier survival plot
(2) Dependent time variable: time from the birth of the first child

Source: GGS Czech Republic 2005

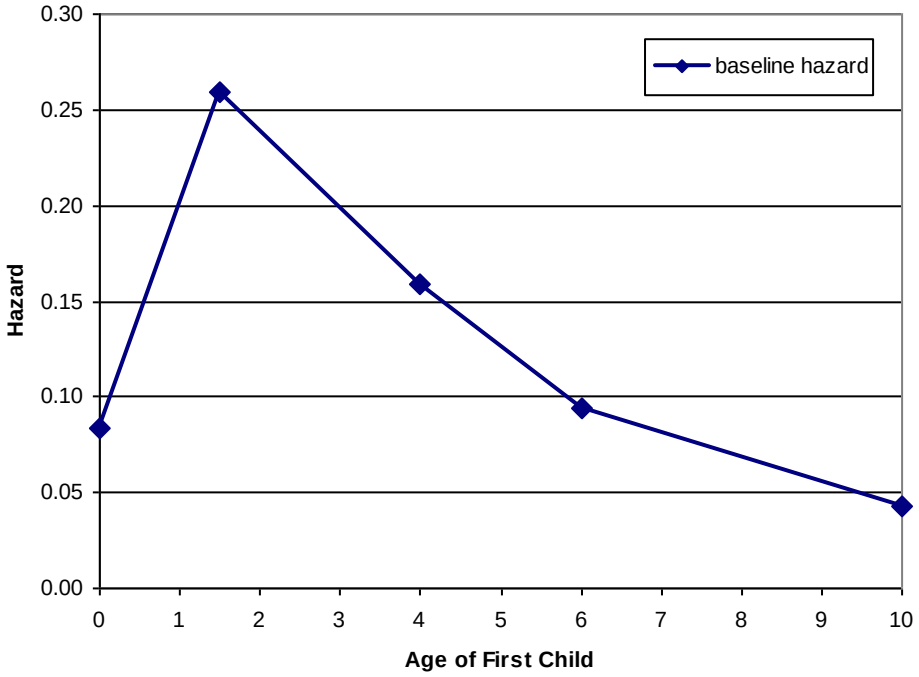
In the following section, the author investigates the transition to second child more closely and includes a complex of covariates in different models in order to describe the second birth trajectories of different groups of women.

[56] Anticipatory analysis refers to any approach where post or current behaviour is explained by future outcomes. An event can be the cause of another event only if it happens first. If education is completed regularly before childbearing begins, a causal interpretation of fertility by final level of education may be meaningful since in this case it does not matter when educational attainment is measured (Hoem, Kreyenfeld 2006). However in reality this is not the case, especially for the first birth (but also applies to the second birth), since educational attainment changes over the life course.

11.2 Second birth and the influence of social background and demographic characteristics

The baseline hazard which consists of second conception intensity measured in months from the birth of the first child is displayed in Figure 11.3. It was found that the risk of second conception increases rapidly a short time after the first birth and is at its maximum when the first child is still relatively young. This confirms the relatively shorter intervals between first and second births which prevailed up to the 1990s. Cohort differences in the timing of a second conception associated with the postponing of a second birth among younger women will be discussed in section 11.5.

Figure 11.3 Intensity of second conception – baseline duration pattern



Notes: (1) Method: event-history model (generalized Gompertz)
(2) Dependent time variable: time from the birth of the first child as a piecewise-linear spline
(3) Baseline duration pattern – model's dependency on time without any covariates.
Source: GGS Czech Republic 2005

Firstly, in **Model 1** the effect of a woman's highest achieved educational level is analyzed. Whereas being still in education after the first birth lowers the risk of having another child, there are no significant differences according to highest educational level achieved among women no longer in education. Lower birth risks whilst studying has been documented in a number of empirical studies (for Czech society see e.g. Kantorová 2004a). The incompatibility of following an education and parenthood can be explained by several factors – economic (no income or very limited income to pay for child-related expenses, lack of appropriate housing etc.), normative (finishing one's education is seen as one of the most important preconditions for entering parenthood – Blossfeld, Huinink 1991), and time pressure (the dual burden of being a student and mother is likely to result in conflicting demands on time).

To measure the impact of family background and early life-course experiences the author included covariates describing the size of the family of origin and parental divorce in **Model 2**. Further membership of a religious community was introduced in order to measure the impact different values and lifestyles within one specific group of mothers.

It is assumed that having a different number of siblings may influence a woman's successive family trajectory and fertility behaviour and that women with a higher number of siblings have a higher tendency to establish larger families and therefore have a higher second birth risk than women with no siblings. In the sample 12 per cent of women were found to have grown up as an only child, 44 per cent had one sibling and 26 per cent had two siblings. The remaining 18 per cent grew up in large families with more than two siblings. Table 11.1 clearly illustrates that having siblings positively influences the transition to second birth whereas conversely, being an only child reduces the risk of having a second child by 13 per cent; the greater the number of siblings, the greater the risk of having a second child.

The results show that a woman's religiosity, i.e. whether she regularly attends religious services (at least once per month), has a positive impact on the risk of a second birth. The impact of religious affiliation corresponds to the results of a study focused on the third child (Pikálková 2003); the different norms and value structures associated with religious belief play an important role in second order births as well as in selecting to have an even larger (three and higher order children).

Model 2 confirms the assumption that having divorced parents in childhood reduces the risk of transition to a second birth. The risk is slightly reduced in all the models that do not control for a woman's partnership status. The influence of partnership arrangements as a time-varying covariate will be discussed in section 7.3 where it will be shown that the effect of parental divorce disappears when controlling for the partnership status of women and union order.

Model 3 has been extended to include the covariate "relative age at first birth" which distinguishes age at entry into motherhood according to different educational levels as *rather young, medium, rather old*. It is assumed that women who had their first child later than other women with the same level of education will have the lowest risk of having another child whereas those who became mothers relatively early are more likely to have a second child. This assumption proved to be the case in the Czech Republic.

Table 11.1 Transition to second child, event-history models with time constant and time-varying covariates

	MODEL 1			MODEL 2			MODEL 3			MODEL 4		
Age of first child												
intercept	-2.4916		***	-2.5606		***	-2.4979		***	-2.3848		***
slopes:												
0-1.5 years	0.7483		***	0.7566		***	0.7529		***	0.7808		***
1.5-4 years	-0.1971		***	-0.1950		***	-0.1940		***	-0.1708		***
4-6 years	-0.2660		***	-0.2584		***	-0.2532		***	-0.2349		***
6-15 years	-0.1955		***	-0.1938		***	-0.1887		***	-0.1791		***
Period												
1969-1975										0.0398		
1976-1979										-0.0317		
1980-1989										-0.0381		***
1990-1995										-0.0366		*
1996-2005										0.0318		*
	β	**exp(β)**		**β**	**exp(β)**		**β**	**exp(β)**		**β**	**exp(β)**	
Education												
In education	-0.2707	0.76	*	-0.2478	0.78	*	-0.3866	0.68	***	-0.4404	0.64	***
Out of education:												
Basic	0.1167	1.12		0.0131	1.01		0.0596	1.06		-0.0261	0.97	
Secondary	0.0652	1.07		0.0237	1.02		0.0691	1.07		0.0526	1.05	
Secondary/ leaving exam age 18/19		*1*			*1*			*1*			*1*	
Tertiary	-0.0457	0.96		-0.0321	0.97		-0.0039	1.00		0.0100	1.01	
Number of siblings												
None				-0.2623	0.77	***	-0.271	0.76	***	-0.3128	0.73	***
1 sibling					*1*			*1*			*1*	
2 siblings				0.2015	1.22	***	0.1707	1.19	**	0.1517	1.16	**
3 and more siblings				0.3109	1.36	***	0.2805	1.32	***	0.2470	1.28	***
Divorce of parents before age 16												
No					*1*			*1*			*1*	
Yes				-0.1753	0.84	**	-0.2005	0.82	**	-0.1659	0.85	*
Other/Missing				0.0697	1.07		0.0883	1.09		0.0941	1.10	
Religion												
Attendance at a religious service at least once a month				0.1854	1.20	**	0.2392	1.27	***	0.1971	1.22	**
Attendance less often/ no attendance					*1*			*1*			*1*	
Age at first birth												
Rather young							0.1454	1.16	**	0.1384	1.15	**
Medium								*1*			*1*	
Rather old							-0.4996	0.61	***	-0.4316	0.65	***
Log-likelihood	-7407.6			-7385.6			-7348.9			-7321.8		
Initial log-likelihood	-7412.8											

Notes: (1) Method: event-history model (generalized Gompertz)
(2) Dependent time variable: time from the birth of the first child as a piecewise-linear spline
(3) Significance: *** p<0.01; ** p<0.05; * p<0.1

Source: GGS Czech Republic 2005

In **Model 4** an additional duration spline for controlling the effect of current calendar time as a time varying covariate was introduced. In mathematical terms, the linear spline specification is as follows:

$$\ln h_i^{(2)}(t) = y^{(2)}(t) + \sum_j \beta_{1j}^{(2)} x_{ij} + \sum_k \beta_{2k}^{(2)} w_{ik}(t) + z_c^{(2)}(c_i(0) - c_{\min} + t) \qquad \textbf{(3)}$$

where similar to (2), $h^{(2)}(t)$ is the hazard of second conception at time t, $y^{(2)}(t)$ is the baseline hazard, x_{ij} are the time constant covariates and w_{ik} are time varying covariates; β_1 and β_2 represent the respective coefficients for the effect of time constant and time varying covariates on the log risk of a second conception. $z_c(\ )$ is a linear spline to represent the effect of calendar time, $c_i(0)$ is calendar time at the beginning of the episode for the individual i (i.e. at the birth of the first child) and c_{min} is the minimum value of calendar time at the beginning of the episode in the data, i.e. the year 1969 when the first child was born.

The effect of the calendar period is quite stable and corresponds with main fertility trends during the last 40 years in the Czech Republic. Following an increase in intensity in the first half of the 1970s (during the pro-natal policy period), there was a long period of decline which began in 1976. Between 1990 and 1996 period fertility rates declined sharply from 1.89 to 1.18. There was a turning point in the mid 1990s; whereas the total fertility rate was stable at below the 'lowest-low' threshold (1.1-1.2) until 2004 the risk of a second birth began to increase in 1996. Whether this was due to the effect of selectivity on the part of women who postponed entry into motherhood in the first half of the 1990s and decided that finally having had a first child they would proceed to a second will be discussed in the framework of a model which will analyze first and second births jointly.

11.3 Partnership status and union order

Having a partner is one of the key determinates influencing the second conception decision-making process. The author expected the second conception risk for married women to be higher than for cohabiting women and for women in a union of whatever nature to be higher than for those living without partner. Moreover, union order and the fact of having a new partner were investigated.

Results confirmed the hypothesis and show that the relative risk of a second conception is highest for married Czech mothers; those who cohabit have a lower risk than those in a legal union and the risk is even smaller for women without a partner (not in a union) (Table 11.2). The interaction between the covariates "union order" and "new union" indicates that there is an elevated risk of a second conception with a new partner.

Table 11.2 Transition to second child, the effect of partnership status and union order

	MODEL 5		
Age of first child			
intercept	-2.2793		***
slopes:			
0-1.5 years	0.7659		***
1.5-4 years	-0.1575		***
4-6 years	-0.2240		***
6-15 years	-0.1796		***
Period			
1969-1975	0.0263		
1976-1979	-0.0299		
1980-1989	-0.0359		***
1990-1995	-0.0272		
1996-2005	0.0403		**
	B	**exp(b)**	
Education			
In education	-0.4514	0.64	***
Out of education:			
Basic	0.0746	1.08	
Secondary	0.0579	1.06	
Secondary (school-leaving exam at age 18/19)		*1*	
Tertiary	-0.0116	0.99	
Number of siblings			
None	-0.2935	0.75	***
1 sibling		*1*	
2 siblings	0.1800	1.20	***
3 and more siblings	0.2713	1.31	***
Divorce of parents before age 16			
No		*1*	
Yes	-0.1330	0.88	
Other/Missing	0.0600	1.06	
Religion			
Attendance at a religious service at least once per month	0.2124	1.24	***
Attendance less often/ no attendance		*1*	
Age at first birth			
Rather young	0.2014	1.22	***
Medium		*1*	
Rather old	-0.3896	0.68	***
Partnership			
Cohabitation	-0.4721	0.62	***
Marriage		*1*	
Out of union	-0.9732	0.38	***
Number of union	**New partner - exp (b)** No	Yes	
1	*1*	1.18	
2+	0.91	**1.92**	***
Log-likelihood	-7 252.38		
Initial log-likelihood	-7 412.74		

Notes: (1) Method: event-history model (generalized Gompertz) (2) Dependent time variable: time from the birth of the first child as a piecewise-linear spline (3) Significance: *** p<0.01; ** p<0.05; * p<0.1
Source: GGS Czech Republic 2005

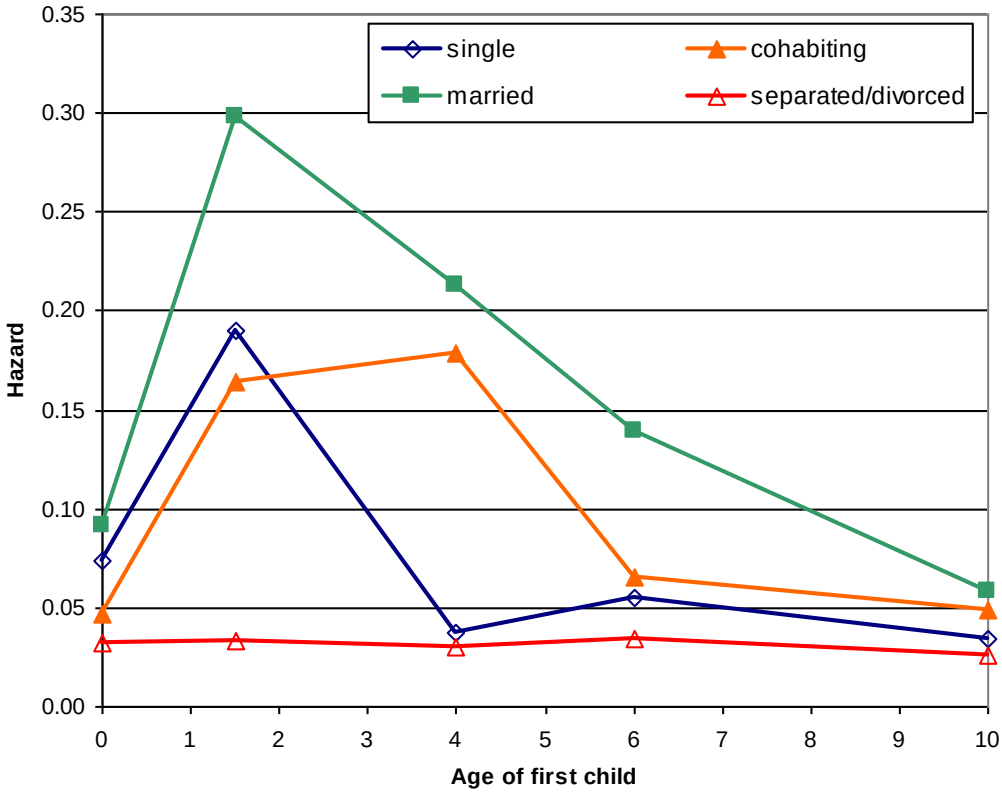
In model 5 (Table 11.1) the statistical significance of the effect of parental divorce disappears after controlling for the effect of partnership status and union order. In the Czech Republic parental divorce has the effect of lowering the age at which a child leaves home and the age at which a child begins living with a partner in a shared household (Šťastná 2005b). Similarly, parental divorce increases the occurrence of cohabitation prior to marriage (Šťastná 2005b, Zeman 2003). The daughters of divorced parents significantly more often live with their partner in a state of cohabitation than women who have grown up in two-parent families. Therefore in the case of a second birth the effect of parental divorce is probably mitigated through the nature of the partnership.

Other covariates and their impact on the process being studied are not affected by controlling for partnership status.

Interaction between partnership status and the age of the first child (Figure 11.4) indicates that for mothers in a marital union, the intensity of second births peaks early after the first birth whereas for cohabiting women it remains high until the first child reaches the age of 4 years (however over this entire period the intensity is lower than for those who are married). The intensity of second order births for mothers living out of a union after the disruption of a relationship, divorce or widowhood is extremely low; single mothers have a similar intensity as cohabiting women who have a first child at a very young age; when that child is older than four years their behaviour is similar to that of separated/divorced women. One can hypothesise that being single with a very small child does not necessarily mean having no partner[57] (father of the child); those who have a partner might exhibit similar behaviour as women cohabiting with partners who might well form a partnership later (cohabitation or marriage). Those who remain single for a longer period of time probably live without a non-cohabiting partner and therefore exhibit a similar intensity to separated or divorced women.

[57] In surveys such as the GGS questions on partnership history focus on partners living in the same household for a certain amount of time, therefore no information is available on longer-term partners with whom respondents do not share the same household.

Figure 11.4 Intensity of second birth by partnership status



Notes: The model is controlled for current calendar year, education, number of siblings, parental divorce, religious belief, relative age at first birth, order of union and new partner.

Source: GGS Czech Republic 2005

11.4 Different age specification and the selectivity effect

In order to investigate the effect of age at first birth it is possible to add into the model a different specification of age at first birth - age as a categorical variable or as a piecewise linear spline. These two specifications provide fairly similar results[58] and therefore the author presents a model which includes the current age of women as a regressor spline only which is a more flexible modelling method[59].

[58] The model with age at first birth as categorical covariate is not shown here but can be obtained from the author on request.

[59] AML offers the capability of allowing the hazard to be a function of other durations. Thus it is possible to capture age effects through the continuously changing function of age (piecewise-linear). This is a better solution than using time varying covariates. By definition, time varying covariates change discretely from one sub-interval to the next, and their effect on a hazard thus consists of discrete jumps (Lillard, Panis 2003: 180)

In mathematical terms, the specification is as follows **(4)**:

$$\ln h_i^{(2)}(t) = y^{(2)}(t) + \sum_j \beta_{1j}^{(2)} x_{ij} + \sum_k \beta_{2k}^{(2)} w_{ik}(t) + z_a^{(2)}(a_i(0) - a_{\min} + t) + z_c^{(2)}(c_i(0) - c_{\min} + t)$$

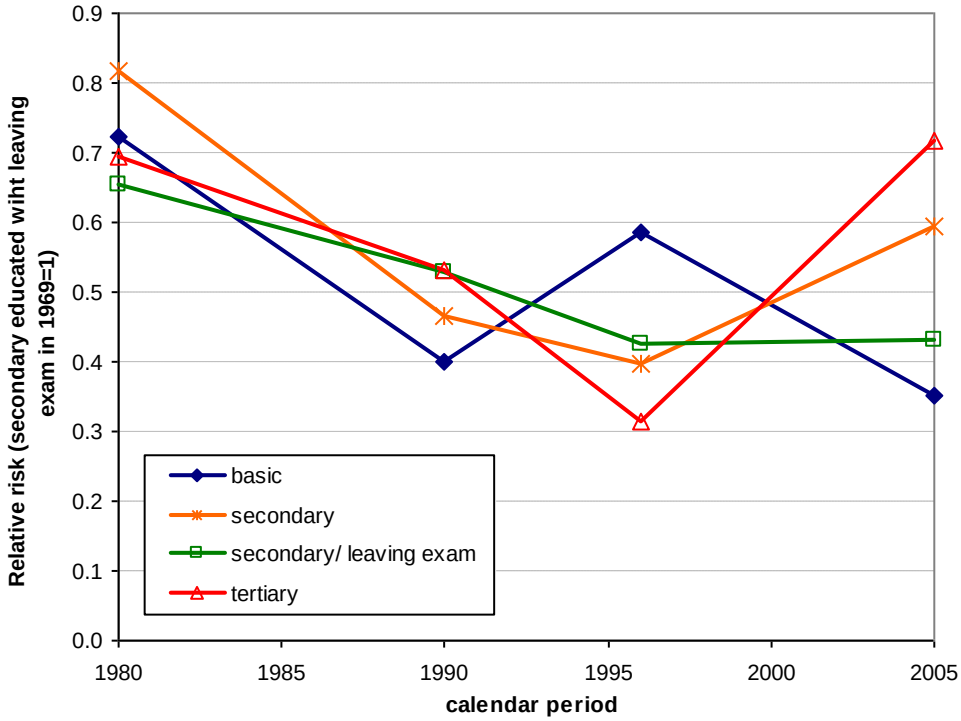
where $h^{(2)}(t)$ is the hazard of a second conception at time t, $y^{(2)}(t)$ is the baseline hazard, x_{ij} are the time constant covariates and w_{ik} are time varying covariates; β_1 and β_2 represent the respective coefficients for the effect of the time constant and time varying covariates on the log risk of a second conception. $z_c(\ )$ is the linear spline representing the effect of calendar time, $c_i(0)$ is calendar time at the beginning of the episode for the individual i (i.e. at the birth of a first child) and c_{min} is the minimum value of calendar time at the beginning of the episode in the data, i.e. year 1969 when the first child was born. $z_a(\ )$ is the linear spline representing the effect of the current age of the woman, $a_i(0)$ is her age at first birth and a_{min} is the minimum age value at the beginning of the episode in the data.

After controlling for the age of a woman, the level of education appears to be a differentiating factor (and becomes significant) since having a university degree increases the relative risk of having a second child by 20 per cent compared to women with secondary education with the school-leaving exam who leave education at age 18/19 (model 6 in Table 11.3 compared to models 4 and 5). By inserting age at first birth as a linear spline describing the current age of a woman the interaction effects between a woman's education and age at first birth cause significant differences according to highest educational level achieved.

According to the results of Model 6, the risk of a second conception decreases with the increasing age of the woman. Late age at first birth generally has a depressing effect on the transition to a second conception. This is not necessarily the case of women with tertiary education, who usually have a first child later. This interaction between age at first birth and educational level does not affect the results if controlled for in a similar way suggested by previous studies and particularly by B. Hoem (1996) and use relative age at first birth (models 4 and 5 in tables 11.1 and 11.2).

To capture the role of educational attainment in different periods the interaction of women's educational level with a period spline was employed (Figure 11.6). Before the beginning of the 1990s the effect of the calendar period is quite stable across all educational categories and there was a long period of decline which began in the late 1970s. Between 1990 and 1996 second birth risks decreased continuously for women with secondary and tertiary education. Only women with basic education showed increasing second birth risks during the first half of the 1990s. There was a turning point in the mid 1990s for both university graduates and women with basic education. Whereas the risk of second birth was stable for secondary educated women with the school leaving exam until 2005 (and increased moderately for secondary educated women without the school-leaving exam) the risk of a second birth began to increase noticeably in 1996 for university graduates. On the other hand, the risk of second birth decreased steadily for lower educated women.

Figure 11.5 Second birth relative risks by highest educational level achieved and period



Notes: The model is controlled for age at first birth as a linear spline.
Source: GGS Czech Republic 2005

Whether the important increase in second birth risk for highly educated women was due to the effect of selectivity on the part of highly educated women who postponed entry into motherhood in the first half of the 1990s due to increasing opportunity costs and economic instability is discussed in Table 11.3. In Table 11.3 the author compares estimates obtained from a traditional, separate model of first and second births with those obtained from a joint model. The joint model for first and second birth rates, including an unobserved factor allowed to influence all of these rates, was applied by Kravdal (2001) as a more direct way of capturing the importance of unobserved heterogeneity[60]. He estimates the transition to the first, second and third child within a joint model and adds a common unobserved heterogeneity factor. In a similar way to Kravdal (2001), the author estimates first and second birth probabilities within a joint model and inserts a common **unobserved heterogeneity** factor into the model (see chapter 10.2).

The results show that the common unobserved heterogeneity factor in the joint model is positive and significantly different from zero. This means that there are unobserved factors, respondent-specific characteristics, which affect fertility decisions. The interpretation that is

[60] The concept of unobserved heterogeneity is based on the fact that individuals may experience several family and fertility events over their life-course and it is not possible to assume that the events for the same individual are independent. Therefore it is necessary to suppose unobserved individual-specific factors which affect the hazard of all events affecting an individual. It is thus necessary to control for the dependence of the events of an individual. If repeated events (e.g. first and second birth) are available for individuals it is possible to easily identify and control for individual-level heterogeneity.

proposed for the unobserved heterogeneity factor is the concept of the part of the population that is more "family-prone" than the other (Kreyenfeld 2002, Kravdal 2001). These two groups, those with high-family proneness and those with low-family proneness cannot be distinguished in the data by means of a question; however they probably display different fertility behaviour over their life-course. Kreyenfeld (2002) argues in the case of West Germany that the positive effect of female educational attainment on the transition to second child can be attributed to self-selection. The "self-selection" of family-prone women might bias the effect of college education on second birth risks. Women who choose to set up a family should either have low employment ambitions or a high family orientation and highly-educated women who remained childless probably have slightly different characteristics. Therefore the "family-proneness" of college graduated women with one child could possibly foster their transition to a second child.

Results for the Czech Republic show that, contrary to the positive effects of a tertiary education on second-birth rates (seen in the separate model), there is no significant effect of tertiary education after having included an unobserved factor in the joint model (Table 11.3). Results prove that omitting this unobserved heterogeneity component upwardly biases the risk of a second birth for highly-educated women.

Such results could possibly hint at a selection hypothesis proposed by Kreyenfeld (2002) that refers to family-prone highly-educated women who place themselves in the higher risk of first birth group and, therefore, family orientation, rather than educational attainment, increases the risk of a second birth. However, such an interpretation has to be treated with caution since the role of education in the transition to second birth among Czech women differs widely according to the specification of the analytical model. In most of the models the level of education does not have any significant effect on second birth risk; only that model which uses an age spline to capture the age of women indicates a higher tendency for highly-educated women to have a second birth. It clearly shows how sensitive the effect of women's education is to the specification of the model.

A further result is that a positive effect of high education is estimated for first-birth rates when such rates are modelled separately controlling for identical covariates[61]. However, the positive effect cannot be detected in the joint model for first and second births. The effect of higher education also disappears in the separate model if this model is made more complex and is controlled for partnership status (this model is not shown).

Analogically to previous models in which partnership status was not included (models 1-4); in the joint model the negative effect of parental divorce on second birth risk is significant (Table 11.3).

[61] The covariates "divorce of parents before age 16" and "religion" are not controlled in the model of transition to first child since these covariates do not have any impact on the transition under study and they do not significantly improve the model.

Table 11.3 Transition to first and second child, event-history models for each transition and joint model with an unobserved heterogeneity factor

	First conception					
	Separate model			**Joint model with unobserved heterogeneity factor**		
Age						
intercept	-4.7490		***	-5.5156		***
slopes:						
15-19	0.6066		***	0.6648		***
19-22	0.0520		*	0.1878		***
22-25	-0.0138			0.0949		**
25-28	-0.0146			0.0744		
28-32	-0.2508		***	-0.1932		***
32+	-0.0977		**	-0.0691		
Period (spline)						
1966-1975	0.0683		**	0.0961		***
1975-1979	-0.0603		**	-0.0574		*
1980-1989	0.0300		***	0.0197		*
1990-1995	-0.1208		***	-0.1290		***
1996-2004	-0.0331		**	-0.0572		***
	β	**exp(β)**		**β**	**exp(β)**	
Education						
In education	-1.1103	0.33	***	-1.2075	0.30	***
Out of education:						
Basic	-0.0386	0.96		0.1536	1.17	
Secondary	0.0012	1.00		0.0524	1.05	
Secondary (school-leaving exam at age 18/19)		*1*			*1*	
Tertiary	0.1822	**1.20**	*****	-0.0811	**0.92**	
Missing	-0.2369	0.79	*	-0.1102	0.90	
Number of siblings						
None	-0.1598	0.85	**	-0.171	0.84	*
1 sibling		*1*			*1*	
2 siblings	0.1491	1.16	***	0.2136	1.24	***
3 and more siblings	0.3193	1.38	***	0.4921	1.64	***
Log-likelihood	-11 670.8			x		

continuation

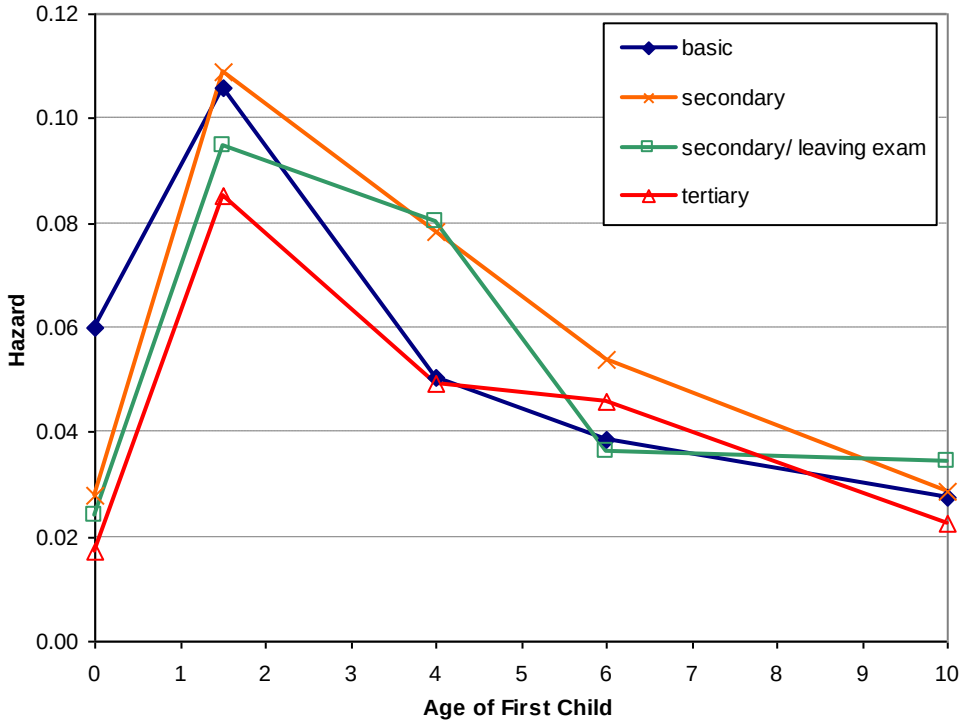
	Second conception					
	MODEL 6 (separate model)			**Joint model with unobserved heterogeneity factor**		
Age of first child						
intercept	-2.2224		***	-3.3921		***
slopes:						
0-1.5 years	0.8153		***	0.8316		***
1.5-4 years	-0.1214		***	-0.1301		***
4-6 years	-0.1952		***	-0.2421		***
6+ years	-0.0465			-0.0944		***
Age (spline)						
18-25	-0.0312			0.1249		**
25-30	-0.0420		*	0.0717		**
30-35	-0.1652		***	-0.0842		*
35-40	-0.2645		**	-0.2295		*
40+	-0.2605			-0.1862		
Period (spline)						
1969-1975	0.0399			0.0295		
1976-1979	-0.0463			-0.0433		
1980-1989	-0.0355		***	-0.0447		***
1990-1995	-0.0305			-0.0439		**
1996-2005	0.0236			-0.0052		
	β	**exp(β)**		**β**	**exp(β)**	
Education						
In education	-0.389	0.68	***	-0.6774	0.51	***
Out of education:						
Basic	-0.1116	0.89		0.0681	1.07	
Secondary	0.0052	1.01		0.0876	1.09	
Secondary (school-leaving exam at age 18/19)		*1*			*1*	
Tertiary	0.2054	**1.23**	**	-0.0211	**0.98**	
Number of siblings						
None	-0.3200	0.73	***	-0.4290	0.65	***
1 sibling		*1*			*1*	
2 siblings	0.1323	1.14	**	0.2556	1.29	***
3 and more siblings	0.2474	1.28	***	0.4835	1.62	***
Divorce of parents before age 16						
No		*1*			*1*	
Yes	-0.1802	0.84	**	-0.2566	0.77	**
Other/Missing	0.1001	1.11		0.1586	1.17	
Religion						
Attendance at a religious service at least once per month	0.1909	1.21	**	0.2819	1.33	***
Attendance less often/ no attendance		*1*			*1*	
sigma	**x**			**0.9220**		***
Log-likelihood	-7 298.74			-18 949.4		

Notes: (1) Method: event-history model (generalized Gompertz)
(2) Dependent time variable for the model of first conception: time from the age of 15 as a piecewise-linear spline. Dependent time variable for the model of second conception: time from the birth of the first child as a piecewise-linear spline.
(3) Significance: *** p<0.01; ** p<0.05; * p<0.1

Source: GGS Czech Republic 2005

In order to analyze the effect of timing within different educational groups of women, the author applied an interaction between the education of women and the age of the first child. Several studies discuss (Kreyenfeld 2002, Köppen 2006) the tempo effect for highly-educated women who try to space their births closer together due to a longer period spent in the educational system and thus bear children at a later age in comparison to their counterparts with a lower education and due to biological (age) limitations. In contrast to the case in France (Köppen 2006) the tempo effect is not proved in the Czech Republic and the author did not find any significantly different spacing of births for highly-educated women (Figure 11.6). The reason for this is both the low childbearing age which was characteristic for women during the socialist era (even university graduated women had their first children relatively early in comparison with their counterparts in Western and Northern Europe, therefore they were not "forced" by biological limitations since they had a somewhat long time spell remaining after first birth), and the timing of their return to work. In the state socialist system with its full employment policy, the equalization of wages and limited career opportunities there were no incentives for highly-educated women to return to work as soon as possible. Recent surveys also show that the idea of long parental care for small children (supported by long parental leave with the mandatory reservation of the work position until the child's third birthday and the "parental allowance" consisting of fixed financial support granted to any parent who provides all-day care for a child who has not yet reached the age of four) persists among today's parents of small children and they prefer to stay at home and provide care at least until the child reaches the age of three or four (Kuchařová et al. 2006a).

Figure 11.6 Intensity of second conception by highest educational level achieved



Notes: The model is controlled for calendar period, age at first birth as a linear spline, number of siblings, parental divorce, religious belief and the selectivity effect (common unobserved heterogeneity factor).

Source: GGS Czech Republic 2005

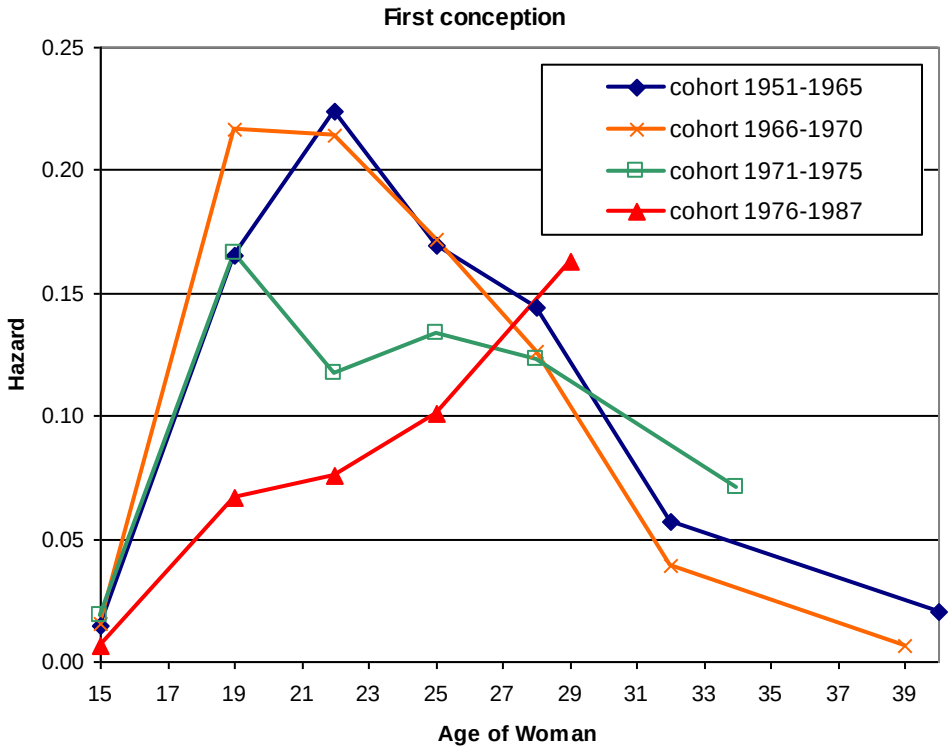
11.6 Differences in birth patterns across generations

In addition to the calendar time perspective used so far in the study's analytical approach the author applied the cohort perspective to analyze the postponement of family-related events among young Czech women while controlling for all explanatory variables. Concerning the role of education and the second birth risk it is important to point out that no interaction effects between education and cohorts were proven.

The continuing postponement of childbearing of first and second parity can be observed in figures 11.7 and 11.8. Starting with cohorts born in the first half of the 1970s, a large decline in first birth intensity was observed. Those women were in their adolescent years when the transition to the market economy commenced and it can be seen that up to their early 20s they showed a similar intensity of first conception to older cohorts. For those women who were childless at the time of the revolution in November 1989, a pronounced shift in intensity and timing of transition to motherhood was observed in the subsequent period of transformation. Compared to the older cohort, the intensity of first conception of the 1971-1975 female cohort was notably lower at ages 21 to 26 but relatively higher after age 27. The youngest cohorts exhibited an entirely different pattern of first childbearing characterised by a low intensity of

first conception in adolescence and continuously increasing intensity up to their late 20s. The influence of efficient birth control methods[62] which increased rapidly post 1990 can be seen in the sharp decline in teenage pregnancies.

Figure 11.7 Intensity of first conception by selected birth cohorts



Notes: (1) Method: event-history model (generalized Gompertz)
(2) Dependent time variable: time from the age of 15 as a piecewise-linear spline.
(3) The model is controlled for education and number of siblings.

Source: GGS Czech Republic 2005

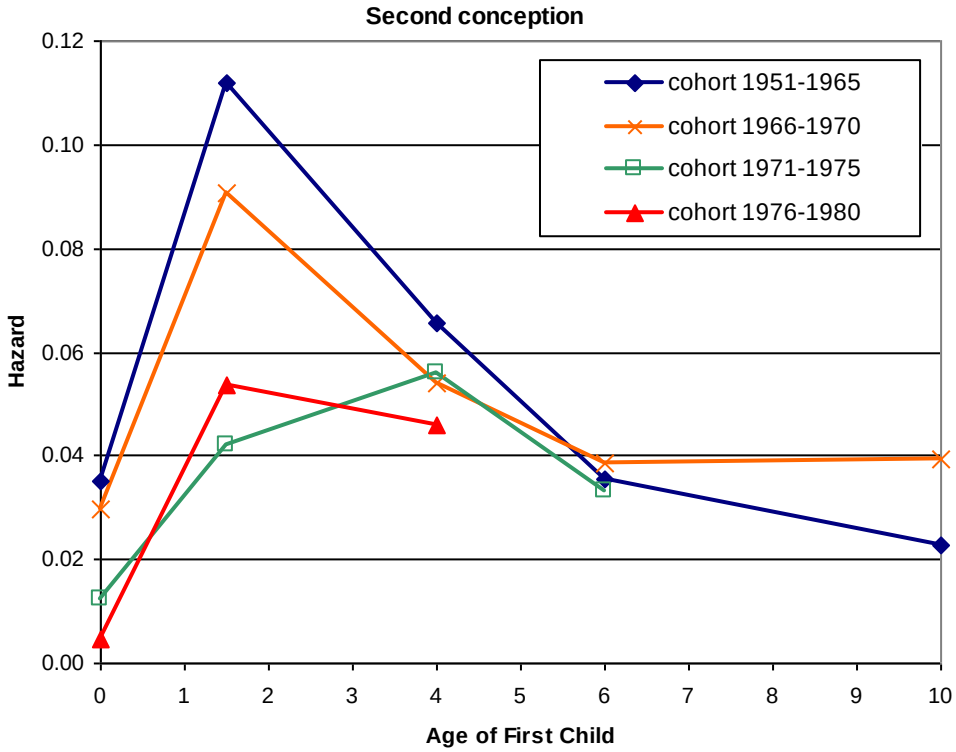
A cohort shift in fertility behaviour is also evident in the case of second conception. If the interaction between cohorts[63] and the baseline (controlling for selected covariates and for personal residuals/selectivity factor) is introduced one sees a shift in timing and a reduction in second conception intensity in cohorts 1971 and younger. Women from the 1971-1975 cohorts were the first to respond to the political changes of 1989 with changing patterns in terms of transition to first child (Figure 11.8), but they also showed different patterns of transition to the second child. The second conception was postponed with highest intensity occurring when the

[62] Most men and women today have used effective contraceptive methods since the start of their sexual lives and first pregnancy involves a carefully planned discontinuation of contraceptive use (Sobotka et al., 2008). The proportion of women aged 15-49 prescribed oral contraception increased ten-fold between 1990 and 2005 from 4.2 percent to 44.7 percent respectively (UZIS 2006).

[63] In this case the youngest cohort (1981-1987) is omitted because of too few cases and exposures. Even for the cohort 1976-1980 the selection effect of more family-prone persons is important, however after introducing the unobserved heterogeneity factor the intensity for this cohort is closer to reality.

first child was around the age of four years. In older cohorts the highest intensity stood at about two years after the first birth.

Figure 11.8 Intensity of second conception by selected birth cohorts



Notes: (1) Method: event-history model (generalized Gompertz)
(2) Dependent time variable: time from the birth of the first child as a piecewise-linear spline.
(3) The model is controlled for education, number of siblings, parental divorce, religious belief, age at first birth and the selectivity effect (common unobserved heterogeneity factor).

Source: GGS Czech Republic 2005

The prolongation of the interval between first and second child is reflected not just in the real behaviour but also in the perceptions of today's young men and women. According to respondents younger than 30 years the ideal time span between the first and second child is 5 years (when considering the ideal number of children in the family as two) (Ettlerová 2007).

11.7 Conclusion

In chapter 10 and 11 the author has presented an analysis of second-birth intensity for Czech women in the 1951 to 1987 birth cohorts. An investigation has been conducted into the determinants of having a second child in Czech society in which the most characteristic trend with regard to reproductive patterns during the Communist era was a strong orientation towards the two-child family and where the ideal of a two-child family still persists.

Analysis reveals that family background and early life course experiences as well as membership of a religious community constitute important second birth determinants in Czech society. Women with siblings also have a greater tendency to establish larger families and have

a higher second birth risk than those with no siblings. Religious belief i.e. whether a woman regularly attends religions services (at least once a month) was found to have a positive impact on the risk of a second birth whereas, conversely, experience of a disrupted parental family home in childhood reduces the risk of transition to a second birth. However, the effect of parental divorce changes along with different model specifications and, in the case of the second birth, the effect of parental divorce is probably mitigated through the form of partnership chosen since the daughters of divorced parents live significantly more often with a partner in a state of cohabitation than do women who grew up in two-parent families.

Chapter 11 included a discussion of two key fertility study variables - education and partnership history. Education is a key sociological and demographic characteristic which plays an important role in determining preferences, values and social behaviour and reflects the socioeconomic and cultural capital of the individual. Nevertheless, from a life course perspective, no significant differences were detected in the risk of a second conception according to highest educational level attained by women who have completed their education (controlled for other personal characteristics).

Having a partner is one of the most important determinants influencing second conception; the second conception risk for married women is higher than that for mothers in a non-legalised relationship or no union at all. In line with previous findings, there is an elevated risk of a second conception upon a new partner entering the family.

From the methodological point of view, Chapter 11 provides a comparison of the effects of the covariates employed in the event-history approach and applying two types of modelling the first of which is the second birth model estimated separately and controlled for a richer set of covariates. The second is a joint model estimating first and second birth risks together and controlling for the selectivity effect – the unobserved heterogeneity factor. Both models, single and joint, confirm the effect of the covariates on second childbearing as well as differences between groups of women. The joint model concept of unobserved heterogeneity is based on unmeasured specific personal characteristics and works with the family-prone hypothesis. According to this concept the author tried to identify potential bias via the stronger family orientation of one educational group of women that artificially fosters transition to a second child for the whole educational group. Results prove that omitting this unobserved heterogeneity component upwardly biases the risk of a second birth for highly-educated women. After including an unobserved factor in the joint model no significant effect was detected for any educational level whereas in the single model, women with a tertiary education were found to have a 23% higher risk of having a second child. Such results could possibly hint at a selection hypothesis proposed by Kreyenfeld (2002) that refers to family-prone highly-educated women who place themselves in the higher risk of first birth group and, therefore, family orientation, rather than educational attainment, increases the risk of a second birth. However, such an interpretation has to be treated with caution since the role of education in the transition to second birth among Czech women differs widely according to the specification of the analytical

model. In most of the models the level of education does not have any significant effect on second birth risk; only that model which uses an age spline to capture the age of women indicates a higher tendency for highly-educated women to have a second birth.

In addition, a separate complex model was employed in which "unmeasured" family orientation and the high value associated with children could be partly hidden within the other characteristics of women controlled in the model. Younger age at firth birth compared to those with the same level of education, earlier partnership formation and traditional partnerships (marriage) were all found to be linked to a higher level of family orientation.

When comparing the single and joint models, one important difference can be seen in terms of the effect of parental divorce. Whereas in the separate model parental divorce has no effect when controlling for other covariates, in the joint model a significant effect can be detected. The effect of parental divorce is probably mitigated through the form of partnership chosen since the daughters of divorced parents live significantly more often with a partner in a state of cohabitation than do women who grew up in two-parent families. Under such circumstances a more complex model, that controls directly for a greater number of covariates, captures the effect of highly inter-correlated covariates more precisely than the joint model that controls for unobserved factors.

12. Summary and conclusions

Over the last twenty years reproductive behaviour has changed profoundly and the reproductive patterns of contemporary young adults differ significantly in terms of both the timing and sequencing of family-related transitions to those of preceding generations. This study is devoted to second order births in a changing Czech society. The author has focused primarily on the relationship between second births and selected micro- and macro-structural conditions and investigated the determinants of having a second child; both the conditions and context surrounding the birth of a second child are investigated.

In the scientific debate on changing reproductive patterns and life courses over the last 20 years in Central and Eastern Europe two basic lines of interpretation concerning changes in reproductive behaviour have been identified. In the context of arguments regarding the scale and significance of the spread of individualistic value systems, the debate tends to be simplified into the "economic crisis" versus the "cultural changes" arguments. However, societal and economic change and political transformation following the collapse of the totalitarian socialist regime were so rapid, profound and complex that it is difficult to identify the extent of the contribution of different factors to changes in fertility.

Some authors argue that structural influences (economic factors) caused by economic and political transformation can be combined with long-term changes in values, and that the degree of influence of structural and cultural factors may change over time. Therefore the discontinuity in people's lives following the collapse of the Eastern Bloc accelerated long-term changes in both values and their influence on the population's familial and reproductive behaviour (e.g. Lesthaege, Surkyn 2002, Philipov 2002). Likewise, Sobotka et al. (2008: 444) argue that the sharp discontinuity in demographic behaviour since the beginning of the 1990s in the Czech Republic "was driven by a fundamental shift in the constraints and incentives for childbearing, both of which were conducive to late and carefully planned family formation".

The aim of this study was not to focus on testing the general hypothesis of fertility decline and changes in reproductive behaviour in the Czech Republic. However, it is not possible to ignore such theoretical discussions in a study focusing on second birth and the two-child family model. Therefore both value orientation factors and structural factors are present in the different forms of analysis employed in this study. The second demographic transition theory, which is based on sociological theories of individualisation and shifts in the values of the populations of developed societies, provides an important and frequently discussed explanatory framework within which considerable attention is devoted to ideational aspects of fertility - fertility plans and intentions, values associated with motherhood in general and having a second child in particular (chapters 7 and 8 of this study).

The gradual decline in second-order fertility at a younger age (notably between the ages of 20 and 25) began as early as at the beginning of the 1980s when the pro-natal policy measures of the mid-1970s ceased to be effective in advancing and creating a short-term increase in second-order fertility. During the early 1990s the declining trend of second-order fertility intensified even though the rapid decline in the fertility rates of young women in this case (aged 20-24) began two years later than for first-order fertility due to the sequential character of the process of postponement of childbearing. A recovery in the case of second-order fertility commenced among women aged 30-34 around the year 2000 and in recent years a recovery has been noticeable among women over 35. However, the recovery of second-order fertility at higher ages has yet to match the level of first-birth recuperation.

The two-child family model was a distinctive feature of the post-war generations and was further strengthened among the generations of the late 1940s and 1950s. A decline in second birth intensities occurred among generations born in the late 1960s. This shift indicates that a change in reproductive patterns and a postponement of childbearing to a later age occurred even among those women who, in many cases, already had one child at the time of profound social change having adhered to the young age pattern of entry into motherhood. Therefore the decline in second births among these women was a direct response to developments in the first half of the 1990s.

Analysis revealed that, compared to a strong tendency towards recovery in the case of first births, the recuperation of second births among those cohorts that postponed, to a large extent, their first births is less intensive. The recuperation of delayed childbearing among cohorts which experienced massive fertility postponement can be seen initially in the transition to first birth and subsequently becomes apparent in the progression to second birth. Therefore catching up effects have to date been less pronounced in the case of second births.

The results of parity-cohort analysis confirm these findings. The prolongation of birth intervals in the early 1990s had an effect on second-birth progression ratios. Important shifts can be observed in shorter durations, e.g. up to 5 years after the first birth, 63 per cent of mothers from the mid-1980s had a second child whereas only 46 per cent of 1993 first-time-mothers did likewise. Mothers giving birth for the first time just before 1989 and in the first half of the 1990s displayed a trend to significantly reduce the frequency of second births in the subsequent three years. Changes in duration-specific rates in the first half of the 1990s were, apparently, not fully compensated for and the effect of decreasing fertility in shorter birth intervals was not counterbalanced by higher second-birth rates over longer durations. Whereas 10 years after the first birth 77 per cent of 1986 first-time-mothers had a second child, this figure fell to 67 per cent of the 1993 parity cohort. Today, it is clear that the late 1980s and early 1990s parity cohorts did not subsequently exhibit a full recovery in terms of second births.

In the first half of the 1990s the decline in fertility rates of younger women and the decline in the TFR were extremely significant. The on-going transition to the late childbearing pattern can be illustrated by a sharp rise in the mean age of mothers at first childbirth; however

a postponement in subsequent births for those women who had already become mothers is apparent from an analysis of birth intervals. Given the socio-economic situation of the first years of the transformation, such a postponement might have contributed to a reduction in the level of uncertainty associated with the economic situation in early adulthood for young Czech women and men. Kohler, Billari and Ortega (2002) stressed that an important socio-economic commonality in lowest-low fertility countries is a high level of economic uncertainty in early adulthood. "This uncertainty provides an incentive to delay decisions that imply long-term commitments, such as the decision to have children, and it provides an incentive to invest in education and human capital." (Kohler, Billari, Ortega 2002).

As was shown in the parts of the study devoted to the issue of fertility intentions and value orientation, the potential of young Czechs to postpone entry into parenthood and to adjust the timing of their fertility intentions to other important transitions in their life course has been facilitated by shifts in value orientations in Czech society in terms of the growing importance of education and finding a stable position in the labour market and by the diverging plasticity of timing decisions including a shift in age norms.

Despite the persistent low total fertility rate (TFR), opinions in the Czech population regarding the ideal number of children in a family have remained relatively consistent. GGS 2005 data confirmed the prevalence of the ideal two-child family model. It also confirmed the long-term trend away from families with more children which had already been documented in various analyses of cohort fertility. However, the important feature in terms of fertility plans detected in the youngest generation was that the average number of children planned falls below the replacement level; on average, women aged 25 or below, i.e. those born in the 1980s want fewer children than the replacement level for the population. A significant proportion of women of these generations also state that they do not intend to have any children.

Though the mean expected family size was lower in younger age groups (partly due to a slightly increased percentage of young women who plan to remain childless), fertility preferences among women who intend to become a mother (or are already mothers) did not prove a higher tendency to plan only one child; indeed the declining expected number of children could be attributed primarily to the declining proportion of younger women who intend to have three or more children.

An analysis of the factors that may affect childbearing preferences regarding number of children revealed a number of structural effects behind real (or planned) behaviour. In particular, the type of family ties and social network experienced during childhood in a large family was found to create a climate that supports plans for a higher number of children. Further important factors affecting preferences for a larger family consist of religious affiliation and the role of the local community, i.e. living in large towns strengthens the decision to have only one child. In addition, other factors determining childbearing preferences include partnership status and marriage; only married women differed significantly in their fertility plans from other

women in that they are less likely to plan one child; conversely they are more likely to plan to have two, three or more children.

Such results reveal the importance of ***social influences*** on fertility. The normative influences of the social environment on various aspects of parenthood, desired fertility timing and intended number of children represent an important mechanism concerning the extent to which social interactions affect fertility decisions. The importance of social norms in terms of the timing of childbearing (and demographic events in general) is one of a number of major issues in the life-course approach and both the results of the analysis focusing on childbearing preferences and the analysis of fertility at the micro-level provide empirical evidence on the relevance of the social environment and societal norms for important life (demographic) events.

Such social influences are important not only because of the effect on an individual's behaviour, but also because of the more general social multiplier effect. In this context Lutz et al. (2006) formulated the "low fertility trap hypothesis" which is based on the process of socialisation and the assumption that the ideal family size for younger generations is declining as a consequence of the lower level of actual fertility they see in previous cohorts. Lutz et al. (2006) argue that once the number of children experienced during childhood and adolescence falls below a certain level, an individual's own ideal family size will decline and this could result in a further decline in actual family size and thus the acceleration of the lowering of the ideal family size of subsequent generations. Therefore the multiplier effect could be based on changes in certain subpopulations (forerunners of the new behaviour) in response to new socio-economic conditions and the subsequent diffusion of modified values and a transformation in terms of prevailing social norms that affect fertility decisions and behaviour.

During the transformation period in the Czech Republic uncertainty in the lives of individuals increased due to economic insecurity and hardship and at the same time economic transition increased the importance of education. Education is a key sociological and demographic characteristic and plays an important role in determining preferences, values and social behaviour and reflects the socio-economic and cultural capital of the individual. Therefore education is widely discussed as an important factor which could potentially influence both the fertility decision-making process and reproductive behaviour. The issue of the high opportunity costs associated with motherhood for highly-educated women adds to the question as to what extent the broader range of opportunities and the rising proportion of highly-educated women are likely to contribute towards the decline in both planned and actual numbers of children.

Interestingly, analysis revealed very small differences in fertility plans according to level of education. A higher level of education does not increase the chances of planning to have only one child and does not decrease the odds of wanting to have a large family (more than two children) when controlling for other important personal characteristics. Therefore it has not been proved thus far that highly-educated women in the Czech Republic intend to have fewer children, neither was this proved for women who do not intend to remain childless, at least in

terms of their aspirations. In reality, however, structural barriers could contribute to both increasing the proportion of women remaining childless and to reducing the real number of children born to highly-educated women. Women with university degrees in the Czech Republic are postponing conception to older age and feel that structural barriers in the labour market and limited opportunities for attaining the right work-life balance represent a high opportunity cost.

The level of education intervenes when deciding whether to have a (another) child and women evaluate differently the importance of living conditions and their partners. Unlike women who have received tertiary education and women who are still studying, women with basic or secondary education emphasise the importance of living conditions, i.e. the financial and housing situations and employment, but also health and suitable childcare. Women with basic education (along with students) also place greater emphasis on the importance of having a suitable partner, including his employment and health situation. In contrast, women with one child do not differ much in their assessments of the importance of objective living conditions and partner when deciding whether to have a second child. From the standpoint of values, the phase of life in which a woman finds herself (including whether or not she is living with a partner) and her life plans concerning family size appear to be the determining factors in this respect. Neither education nor age is considered as important in this regard.

In the third part of the study (chapters 10 and 11) the author presents an analysis of second-birth intensity regarding which an investigation was conducted into the determinants of having a second child for Czech women in the 1951 to 1987 birth cohorts.

In line with findings on second birth intensity in other countries it was found that family background and early life course experiences as well as membership of a religious community constitute important second birth determinants in Czech society. Women with siblings also have a greater tendency to establish larger families and have a higher second birth risk than those with no siblings. Religious belief i.e. whether a woman regularly attends religious services (at least once a month) was found to have a positive impact on the risk of a second birth.

The author introduced the calendar period perspective into the event-history model. However the cohort perspective was also used in selected models in order to capture second birth patterns among the transition and post-transition generations.

The calendar period corresponds with the main socio-economic changes in the Czech Republic which have taken place over the last 15 years as well as with important family policy incentives aimed at slowing down the decline in fertility at the beginning of the 1970s the effect of which is evident from the increase in second birth intensity in the first half of the 1970s (during the pro-natal policy period). Subsequently, a long period of declining fertility levels is reflected in a decrease in second birth intensities (beginning in 1976). Recent years showed a turning point in the mid-1990s; whereas the total fertility rate remained at a level below the 'lowest-low' threshold (1.1-1.2) until 2004, an increase in second births commenced as early as in 1996.

The continuing postponement of childbearing of first and second parities can be seen in different birth cohorts. Starting with cohorts born in the first half of the 1970s, a large decline in first childbirth was observed. The youngest cohorts exhibited an entirely different first childbirth pattern and a cohort shift in timing and intensity is evident in the case of second conceptions in the 1971 cohort and younger.

Chapter 11 includes a discussion on two key fertility study variables - education and partnership history. Having a partner is one of the most important determinants influencing second conception; the second conception risk for married women is higher than for mothers in a non-legalised relationship or no union at all. In line with previous findings, there is an elevated risk of a second conception upon a new partner entering the family.

As far as the Czech Republic is concerned, a stratification of the process of entry into motherhood by education and a marked first birth postponement during the 1990s among highly-educated women have been documented by Kantorová (2004a). Highly-educated women today face increasing childbirth opportunity costs and solve the perceived problem of the non-availability of educational and employment opportunities by postponing family formation, frequently until their early thirties. However, the analysis presented in this study suggests that this differentiation in first birth timing has, to date, not led to widening differences in second-order fertility by level of education. From the life course perspective, no significant differences were detected in the risk of a second conception according to highest educational level attained by women who have completed their educational careers (controlling for other personal characteristics).

The study attempts to place the issue of second-order fertility and the prevailing norm of the two-child family model within the broader perspective of demographic and societal change, in connection with which the role of certain important factors in terms of future developments should be mentioned here.

One important issue concerns the gradual downward trend in fertility intentions declared by the youngest female respondents. Although Czech society retains positive attitudes towards family life and children are valued highly, decreasing fertility intentions suggest that completed fertility is somewhat unlikely ever to surpass the level of two children per woman among younger generations.

Changes in fertility in the Czech Republic are connected with other ongoing demographic changes especially in nuptiality and partnership formation. Czech society and especially the younger generations have widely accepted non-traditional living arrangements characterised by the rapid spread of cohabitation and extra-marital childbirth. The weakening of the link between marriage and childbearing is most likely to continue and could potentially have an impact on overall fertility levels due to the continuing importance of marital status in terms of both fertility intentions and actual behaviour. Delayed union formation and the increasing popularity of less stable forms of living arrangements could lead to a further postponement of parenthood. However, the dependence of (second) birth risk on the mother's age (at first birth) has been

proven and with the increasing age of first-time mothers the chances of having more children could decrease.

The declining importance of marriage, increasing tolerance of divorce and high divorce rates might have an effect on the parenthood careers of younger women in two ways in the future. Divorced mothers of one child, who do not form a new partnership, (perhaps temporarily) terminate their fertility careers. On the other hand, those who form a relationship with a new partner are more likely to have a second child than women in a stable marriage/partnership.

The link between marriage and childbearing is stratified by education. Lower-educated women more frequently have children outside wedlock and form families under unstable conditions (in a cohabiting union or as single mothers) than their more highly-educated counterparts. Moreover, the ever-increasing proportion of highly-educated women might contribute towards declining fertility preferences and actual family size. In this context the potential for choosing voluntary childlessness increases as a broader range of opportunities for self-fulfilment present themselves. On the other hand, the increased risk and uncertainty, especially pertaining to young adults, which have emerged since the wider economy opened up to competition could lead to rising levels of childlessness and declining family size among those of less privileged social strata since the material and economic contexts play a very important role in the fertility decision-making process.

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Act No.99/1948 Coll., on national insurance (o národním pojištění)

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Act No.58/1964 Coll., o zvýšení péče o těhotné ženy a matky

Act No.65/1965 Coll., Labour Code (zákoník práce)

Act No.88/1968 Coll., on extension of maternity leave, maternity benefits and child allowances from sickness insurance (o prodloužení mateřské dovolené, o dávkách v mateřství a o přídavcích na děti z nemocenského pojištění)

Act No.154/1969 Coll.,on maternity benefit (o mateřském příspěvku)

Act No.107/1971 Coll., on maternity benefit (o mateřském příspěvku)

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Act No.51/1987 Coll., on changes of sickness insurance (o změnách v nemocenském zabezpečení)

Act No.382/1990 Coll., on parental allowance (o rodičovském příspěvku)

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Act No.308/1993 Coll., amendment to the act on sickness insurance of employees (Novela zákona o nemocenském pojištění zaměstnanců)

Act No.117/1995 Coll., on state social support (o státní sociální podpoře)

Act No. 110/2006 Coll., on subsistence minimum (o životním a existenčním minimu)

Act No.61/1999 Coll., amendment regulations on sickness insurance (Novela předpisů o nemocenském pojištění)

Act No.187/2006 Coll., on sickness insurance (o nemocenském pojištění)

Act No.262/2006 Coll., Labour Code (zákoník práce)

Institutions provided data / cited in the thesis:

CZSO – Czech Statistical Office www.czso.cz

MoLSA – Ministry of Labour and Social Affairs www.mpsv.cz

OECD – Organisation for Economic Co-operation and Development www.oecd.ogr

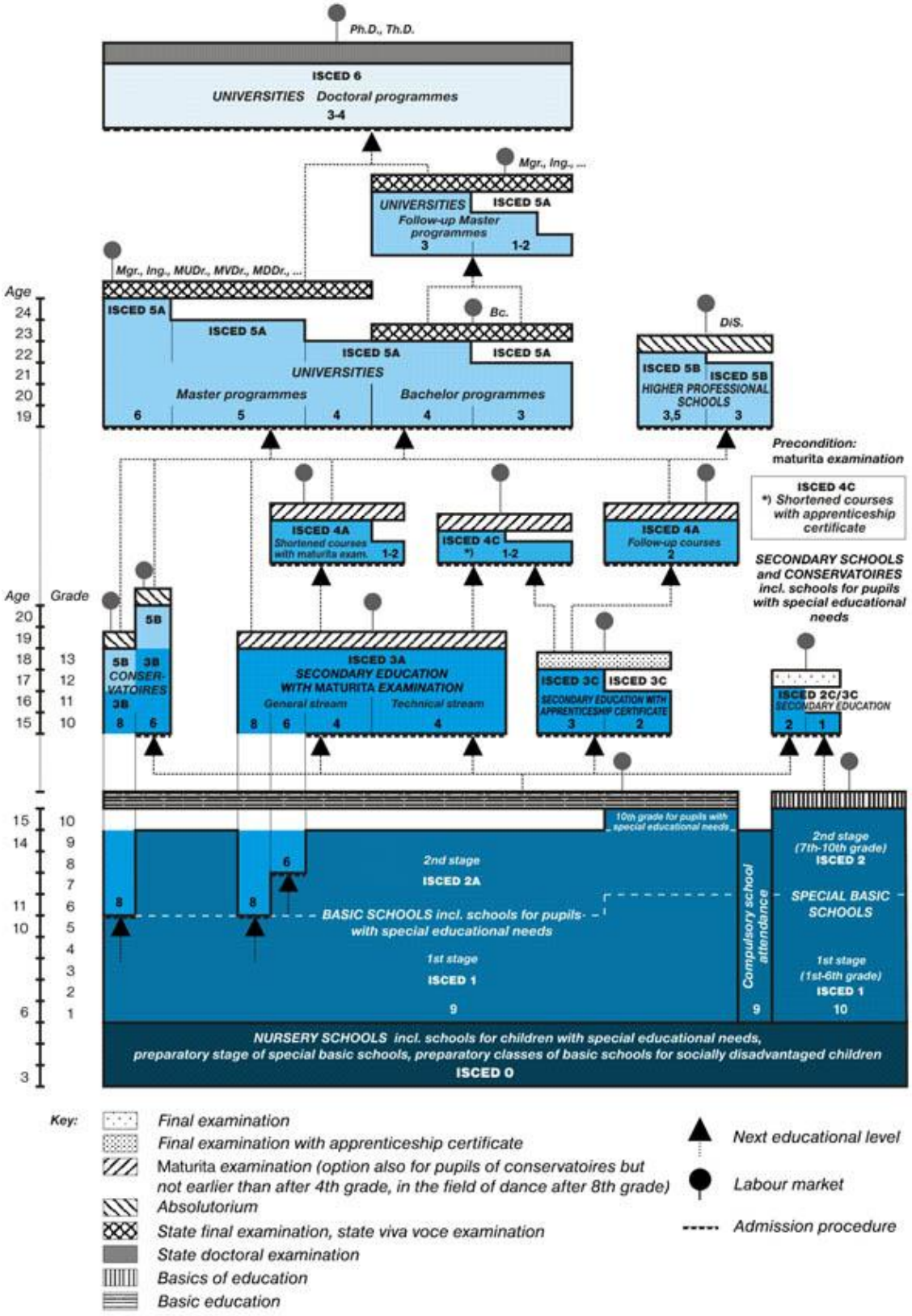
RILSA – Research Institute for Labour and Social Affairs www.vupsv.cz

UIV – Institute for Information on Education www.uiv.cz

UZIS – Institute of Health Information and Statistics of the Czech Republic www.uzis.cz

Appendix

Appendix 1 – Organisational Chart of the Education System in the Czech Republic



Source: UIV

Appendix 2 – Period fertility indicators

In order to extend the possibilities of period fertility analysis and design a measure of the level (quantum) of fertility in a given calendar year that is free from tempo effect, the concept of "tempo-adjusted TFR" has been developed. A first adjustment method was proposed by Bongaarts and Feeney (1998) and, subsequently, several other methods have been suggested as well (e.g. Kohler, Ortega 2002).

A vast demographic literature on the topic of tempo adjustment of period fertility indicators exist (e.g. Bongaarts, Feeney 1998, Philipov, Kohler 2001, Sobotka, Lutz, Philipov 2005 Sobotka 2003). The author does not attempt to discuss the topic in more detail, however the appendix aims to describe in more detail two indicators used in analytical chapters - adjTFR and PATFR.

Following text issues from the methodological protocol provided together with the Human Fertility Database (for describing the PATFR indicator) and from the Bongaarts and Feeney's article (1998) and methodological supplement of the European Demographic Data Sheet published by Vienna Institute of Demography[64]. For more details concerning the topic see given sources and other relevant literature.

adjTFR - Bongaarts-Feeney method

The adjusted TFR calculated on the basis of the Bongaarts-Feeney (1998) formula uses fertility data specified by age of mother and birth order of child. It is the best known alternative to the TFR and their authors consider the adjTFR to be a variant of the TFR, which removes tempo distortions caused by the changes in the timing of childbearing among women and represents the quantum component of the TFR (Bongaarts, Feeney 2000).

This adjustment is based on order-specific total fertility rates (TFR_i) and annual changes in the order-specific mean age at childbearing. The adjusted TFR (adjTFR) in a year *t* for birth order *i* is computed as follows:

$$adjTFR_i(t) = \frac{TFR_i(t)}{(1 - r_i(t))},$$

where $r_i(t)$ is the change in the mean age at childbearing of birth order *i* between the beginning and the end of year *t*, which is estimated as follows:

$$r_i(t) = \frac{MAC_i(t+1) - MAC_i(t-1)}{2},$$

where MACi(t) is the mean age of the childbearing schedule of order *i*, calculated from age-specific fertility rates. The overall tempo-adjusted total fertility rate for all birth orders is computed as the sum of the adjusted order-specific total fertility rates.

[64] Available at: http://www.oeaw.ac.at/vid/datasheet/box2.shtml

To reduce instability in the estimated adjTFR, the author employed the procedure envisaged by the Documentation to the European Demographic Datasheet 2008 and uses the moving average of the adjTFR for the three-year period. The adjustment was performed for birth orders 1, 2, and 3, whereas the conventional TFR was used for birth orders 4+. Since only a small fraction of the overall total fertility is due to births of higher birth order (4+), this procedure did not involve any significant underestimation of the tempo effect.

This formula is the best known alternative to the TFR and is regarded by many authors as useful measure for analysing fertility patterns, especially when fertility is subject to strong and fluctuating tempo effects. However the largest controversy surrounds the Bongaarts-Feeney indicator (Sobotka 2004). Sobotka (2004: 86) summarises two major deficiencies of the Bongaarts-Feeney approach: "(1) Period changes affect different cohorts in a different way. Therefore, the tempo changes in fertility may also change the shape of the fertility schedule. This possibility is not taken into account in the BF adjustment which assumes that the shape of the fertility schedule remains constant. (2) The BF adjusted TFR as well as the conventional TFR may be distorted by changes in the distribution of women by parity."

Period fertility tables[65]

Period fertility tables used in the HFD are increment-decrement life tables, which model the process of childbearing in hypothetical (synthetic) cohorts of women specified by age and parity. The period fertility tables describe childbearing histories of synthetic cohorts of women that would live their whole life under fertility conditions of a given year *t*, assuming the absence of mortality and migration. They are built using a multi-state life table method, where states are defined by current parity.

There are many analogies to the commonly used mortality tables, but differently from them the main function of fertility tables is not the analysis of the timing of births (an analogy to life expectancy would be a waiting time to the birth of the next child), but the levels and trends of fertility across different ages and parity categories.

Period fertility tables are based on conditional age- and order-specific fertility rates and probabilities. Age and parity-specific childbearing probabilities/ intensities (known as occurrence-exposure rates, rates of the first type) meet the principle of correspondence between the nominator and the denominator and reflect the real exposure as probabilities of giving birth of birth order *i* are specified only for women having *i-1* children.

Conditional age-specific fertility rates, $m_i(x)$, are obtained by dividing the number of i^{th} births to women at age *x* in a year *t* by person-years lived by women aged *x* of parity *i-1*, and thus exposed to risk of having an i^{th} birth in the year *t*:

[65] Both results presented in Chapter 4 and method description is taken from the Human Fertility Database. For more details see Methods Protocol for the Human Fertility Database 2010. Available at: « http://www.humanfertility.org/Docs/methods.pdf ».

$$m_i(x,t) = \frac{B_i(x,t)}{E_{i-1}(x,t)}$$

Conditional fertility rates, *mi*(*x*,*t*), which are further converted into probabilities, *qi*(*x*,*t*), serve as the major input for the construction of the period fertility tables.

$$q_i(x) = \frac{m_i(x)}{l + [l - a_i(x)]m_i(x)}$$

At any age *x*, the life table population of the size 10,000 is divided into parity-specific subpopulations, $l_i(x)$. The table population progresses over ages and parities, starting from the initial childless status at the minimum age at childbearing x_{min}, as follows:

$l_0(x_{min}) = 10{,}000$ (the radix)

$l_i(x_{min}) = 0$, for *i*=1, 2, 3, 4

$l_i(x) = l_i(x-1) \times [1 - q_{i+1}(x-1)]$, for *i*=0

$l_i(x) = l_i(x-1) - b_{x+1}(x-1) + L_{i-1}(x-1) \times m_i(x-1)$, for *i*=1,2,3

$l_{i+}(x) = l_{i+}(x-1) + L_{i-1}(x-1) \times m_i(x-1)$, for *i*=4 (*i*+ stands for women at parities *i* and higher)

Table births by birth order for each age *x*:

$b_i(x) = L_{i-1}(x) \times m_i(x)$

$L_i(x) = l_i(x) - l_i(x) \times q_{i+1}(x) \times [1 - a_{i+1}(x)]$, for *i*=0

$L_i(x) = l_i(x) + l_{i-1}(x) * q_i(x) * [1 - a_i(x)] - l_i(x) * q_{i+1}(x) * [1 - a_{i+1}(x)]$, for *i*= 1, 2, 3

$L_{i+}(x) = l_{i+}(x) + l_{i-1}(x) \times q_i(x) \times [1 - a_i(x)]$, for *i* = 4

a(*x*) is the average share of the age interval [*x*,*x*+1) lived before giving birth to a child. It is assumed that all *a*(*x*) values are equal to 0.5 for any age *x* and birth order *i*.

Cumulative births by age *x* and birth order *i* can be computed by summing up table births of order *i* at all ages through *x*-1:

$$Sb_i(x) = \sum_{x_{min}}^{x} b_i(x)$$

PATFR - Index of total fertility computed from age-parity birth probabilities

PATFR is one of the summary indicators computed in the Human Fertility Database on the basis of period fertility tables. *PATFR* is the main output of the period fertility table and represents the summary index of period fertility controlling for age and parity. There is also the parity-specific components - *PATFRi* .

Summary index of period fertility controlling for age and parity for all birth orders combined:

$$PATFR = \frac{\sum_{x_{min}}^{x^{max}} b(x)}{10000}$$

where x_{min}=*12* or youngest, x_{max}=*55+*

Summary index of period fertility controlling for age and parity by birth order:

$$PATFR_i = \frac{\sum_{x_{min}}^{x^{max}} b_i(x)}{10000}$$

where *i=1, 2, 3, 4, 5+*